TECHNOLOGY DEPT

Gas Journal

VOL. 287. 108th YEAR. LONDON, AUGUST 1, 1956. Nº 4855. PRICE 1/6

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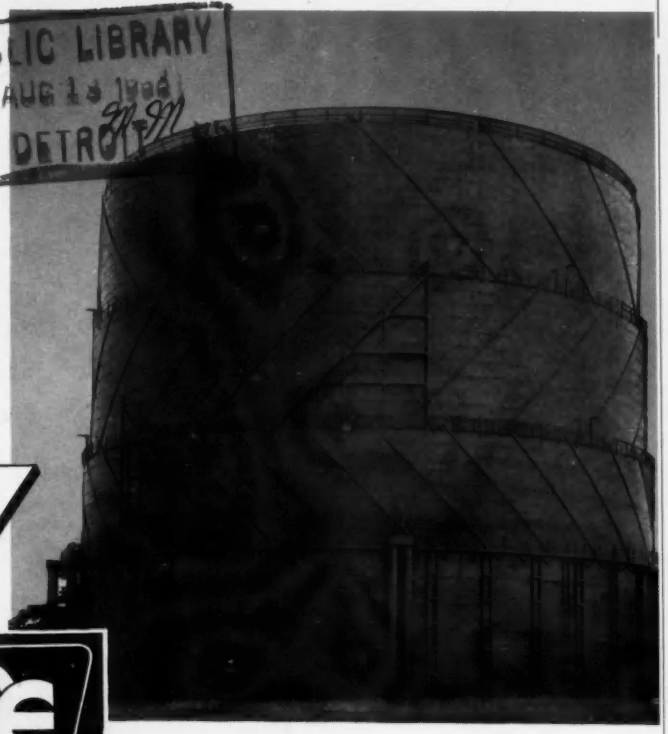
DETROIT

RECENT CONTRACTS



GASHOLDER. 3 lift, spirally guided, 1½ million cubic feet capacity, prepared for a fourth lift.

DE
DEMPSTER·ELLAND

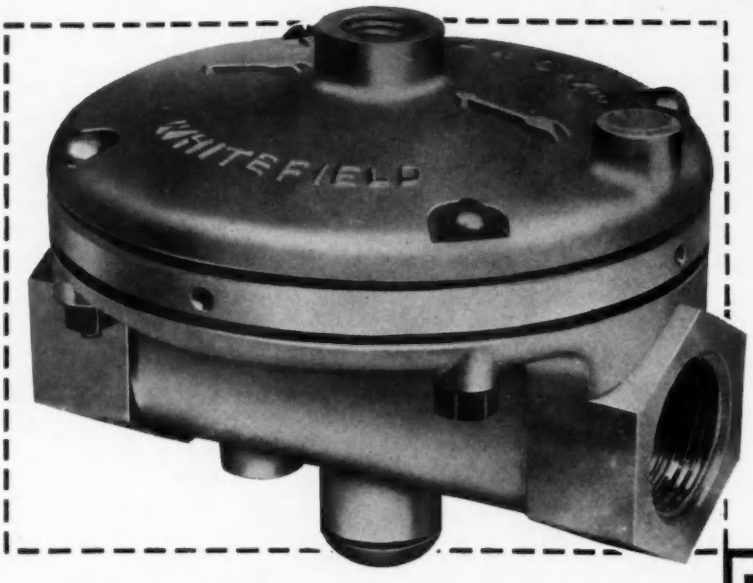
COKE HANDLING PLANT.

Coke Handling, Screening and Storage Plant, from a photograph taken whilst under construction.

by

ROBERT DEMPSTER AND SONS LTD., ELLAND, YORKS.

Other manufactures include: PURIFIERS · CONDENSERS & STATIC WASHERS · COAL & OXIDE HANDLING PLANTS and HORIZONTAL CARBONISING PLANT



- ★ Aluminium Body (4½" long) with Aluminium Cover (4" diam.)
- ★ Plastic Diaphragms with air spacer to ensure that Gas and Steam Circuits cannot mix
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- ★ Extremely reliable and economical

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PRESSURESTAT
FOR USE ON STEAMING EQUIPMENT

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WHITEFIELD Manchester
TEL. WHITEFIELD 2584 (4 LINES) GRAMS THORPIA WHITEFIELD

- ★ Gas connections ¾" and 1" B.S.P. female (can be bushed for ½" if required)
- ★ Adjustment for alternative pressures

1210

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DONKIN HANSON AUTO-PILOT GOVERNOR

FOR USE WITH STATION GOVERNORS

THIS PILOT GOVERNOR IS OPERATED BY AN EIGHT-DAY CLOCK, AND CHANGES THE PRESSURE TO MEET PEAK LOADS, ACCORDING TO REQUIREMENTS. A DIFFERENT LINE CAN BE GIVEN FOR EACH DAY OF THE WEEK IF REQUIRED.

The **BRYAN DONKIN CO LTD** · Chesterfield

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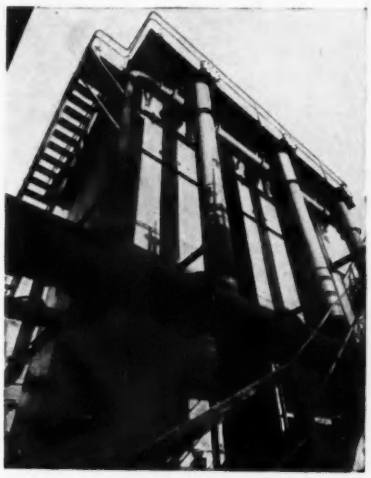
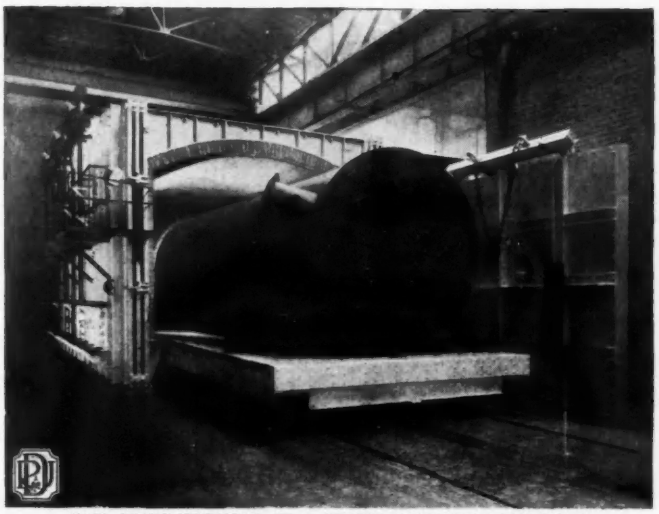
WELDED STEELWORK and HEAT TREATMENT by

(The hallmark of high quality plant)

Our welded steel products include:- BY-PRODUCT and CHEMICAL PLANT · CONDENSERS · DE-TARRERS · GAS-HOLDERS · PURIFIERS · STILLS · TANKS · WASHERS, etc.

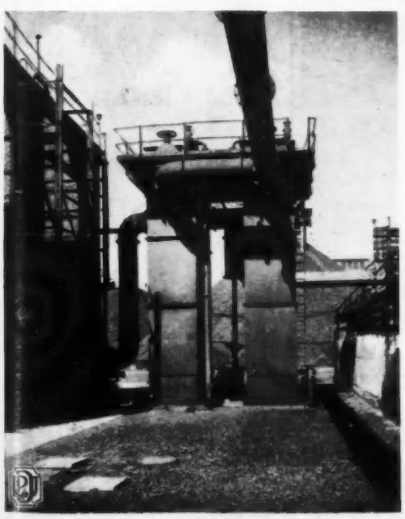


WELDED STEEL VESSELS & CONNECTIONS



OUR HEAT TREATMENT & STRESS RELIEVING FURNACE

(This gas-heated furnace will accommodate welded steel mains, pressure vessels and other components up to 20 tons in weight and, in special circumstances, up to 52 feet in length. Efficient temperature control is provided, and the operating temperature is 0°C. to 800°C.)



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INDICATING TEMPERATURE-CONTROLLER
TYPE 990

PATENT
BRITISH-MADE THROUGHOUT

This unique wide-range direct-deflection instrument indicates and controls temperature accurately . . . it costs considerably less than conventional electronic controllers . . . and, furthermore, outclasses all electronic controllers in accuracy, simplicity and reliability . . . fully described in our new TRANSITROL data-leaflet available on request.

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REQUIRES ONLY $8\frac{3}{4}$" x $4\frac{3}{8}$" PANEL CUT-OUT
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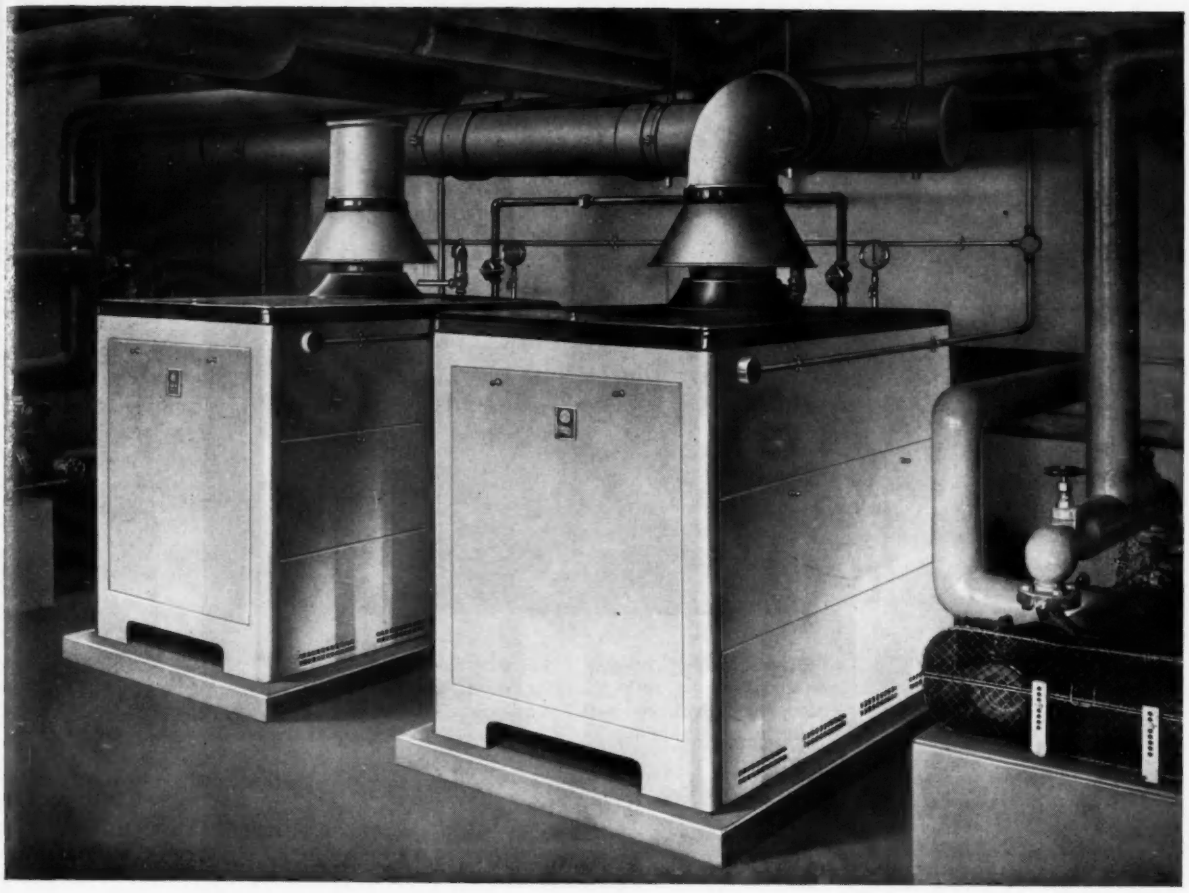

Cleanliness and Efficiency

IDEAL Gas Boilers

Illustrated above are Ideal Gas Boilers installed, for central heating and indirect hot water supply, in the recently completed extension to a hospital.

Cleanliness and a healthy atmosphere are essential to a hospital, and it is therefore important that the heating boilers are fired with a smokeless fuel. In such circumstances, no better choice can be made than Ideal gas-fired boilers. Many years of research work and experience have resulted in the present satisfactory designs.

Ideal Gas Boilers are equipped with complete thermostatic controls, have insulated jackets of steel or aluminium in appropriate finishes and are available in 22 sizes from 20,000 to 1,430,000 B.T.U.'s per hour.

IDEAL-Standard

Foremost for heating and sanitary equipment

IDEAL BOILERS & RADIATORS LIMITED · IDEAL WORKS · HULL

333

DUST and HOT ASH REMOVAL by B.V.C "BRITISH VACUUM CLEANER" INSTALLATION

The illustration shows a typical B.V.C. installation in operation. Cleaning hoses can be coupled to installed piping throughout the works and all dust and ash collected at a central station for disposal. Hot ash can be handled and special non-choking tools are supplied to handle large volumes of ash.

Please write for particulars

THE BRITISH VACUUM CLEANER & ENGINEERING CO. LTD

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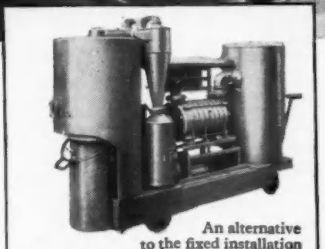
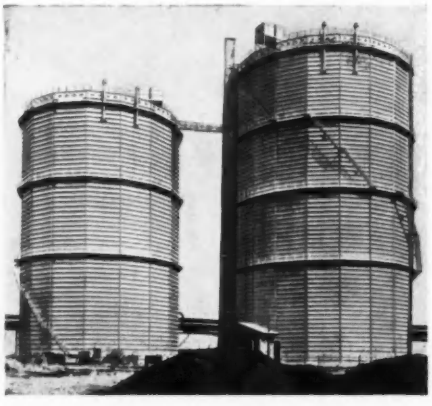


An alternative to the fixed installation is the B.V.C. portable heavy duty plant.

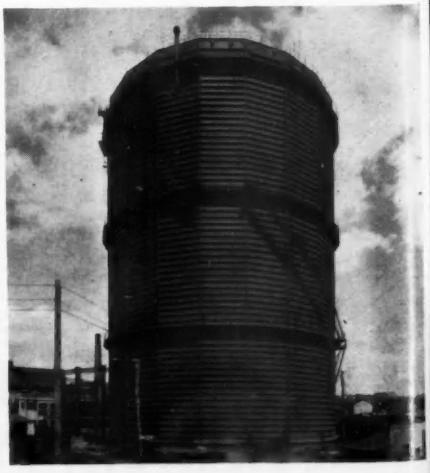
OVERSEAS CONTRACTS



South Africa

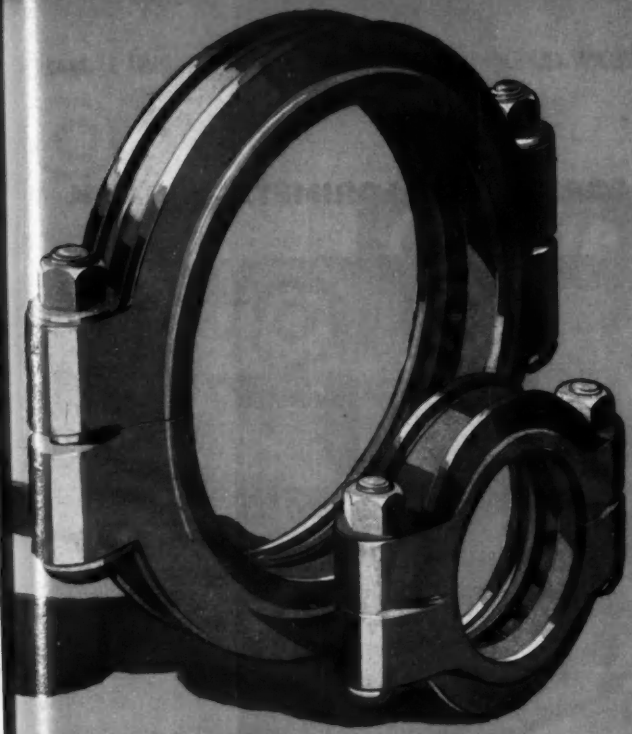
M.A.N.

WATERLESS GASHOLDERS RECENTLY ERECTED → Spain



CLAYTON SON & CO. LTD.

HUNSLET, LEEDS.



VICTAULIC

OINTS for grooved
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positive joint with a valuable amount of angular and
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pidly fitted with an ordinary spanner and can be
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ooved steel, shouldered steel, or cast-
on pipes.

zes from 1" to 72" diameter.

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COUPLINGS for plain-ended pipes

Viking Johnson Couplings for plain-ended pipes, whether of steel, iron, or other material.

Angular deflections up to 6°. Accessories can be supplied for completing internal and external protection.

Sizes up to 100"; also 'Junior' Couplings for ½" to 2" Pipes.

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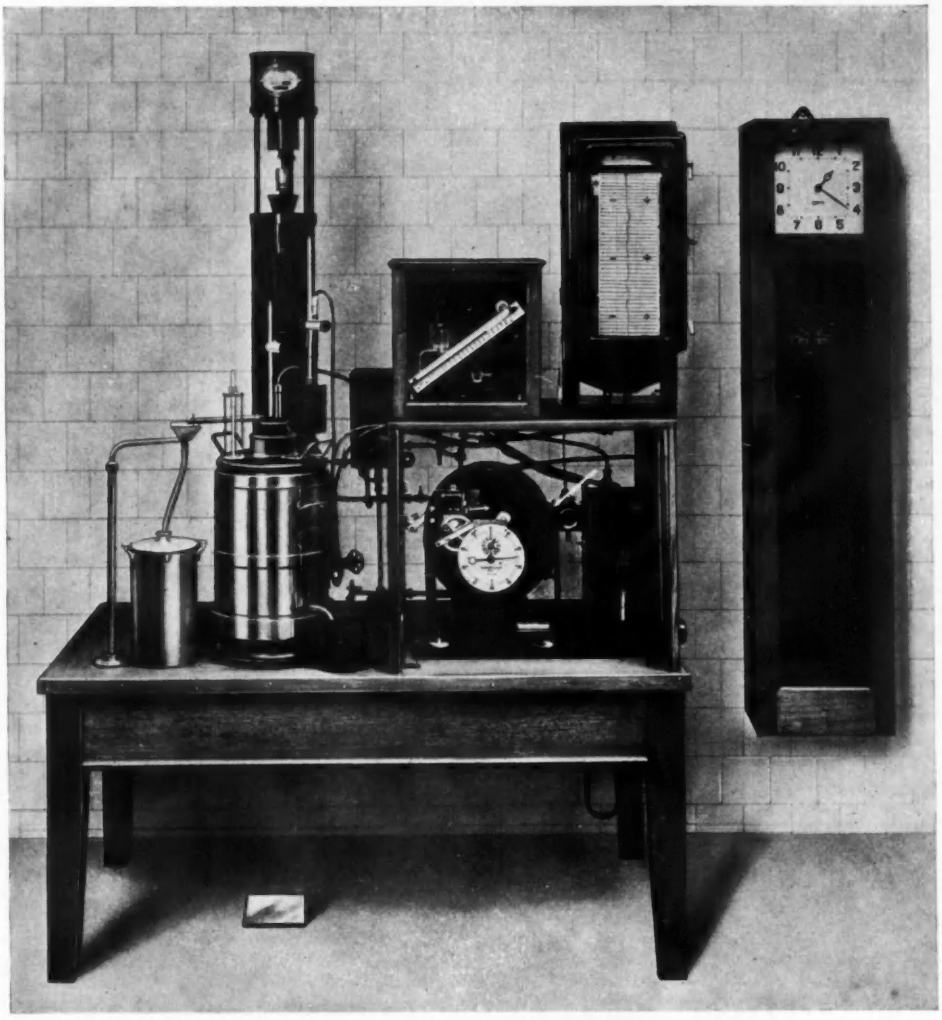
Registered trade marks: 'Victaulic' and 'Viking'

THE — NEW DESIGN

— FAIRWEATHER RECORDING CALORIMETER, MARK II



The new Fairweather Recording Calorimeter, Mark II, possesses all the accuracy and efficiency of its larger predecessor, but with many important improvements—

- AUTOMATIC GAS VOLUME COMPENSATOR
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- SUBSTANTIAL ECONOMY IN WATER USAGE
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- AN INSTRUMENT IDEALLY SUITED FOR WORKS' CONTROL OPERATIONS
- APPROVED BY THE MINISTRY OF FUEL & POWER FOR OFFICIAL TESTINGS

SCIENTIFIC & PROJECTIONS LTD.

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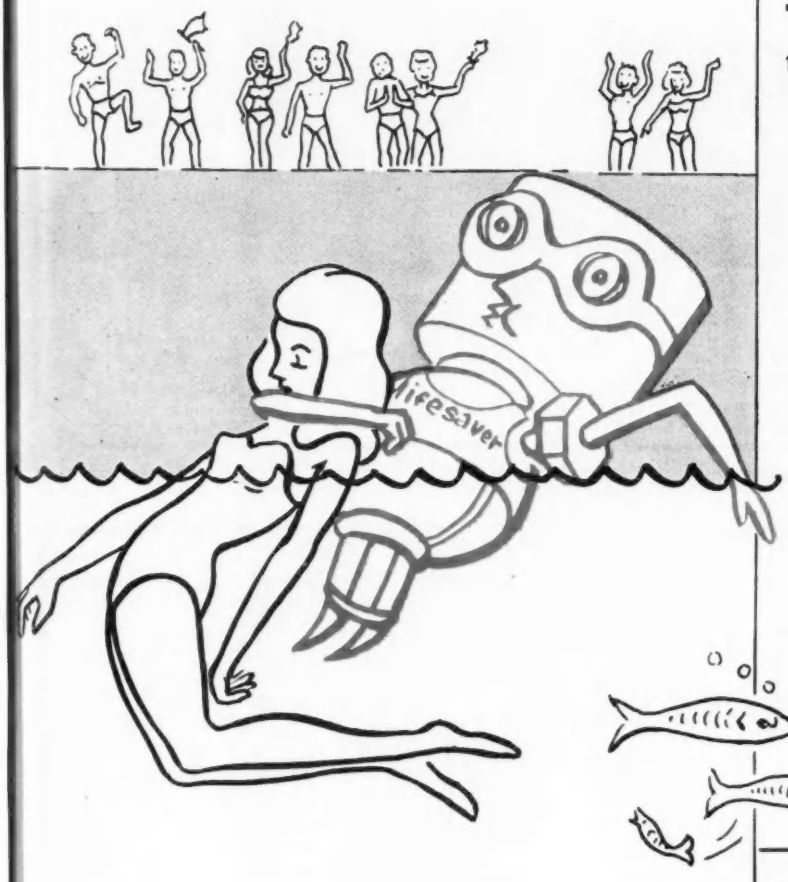
Telephone: LEE GREEN 2112 (4 lines) *Telegrams:* SCIEPRO, BLACKVIL, LONDON

On the subject of CONTROL

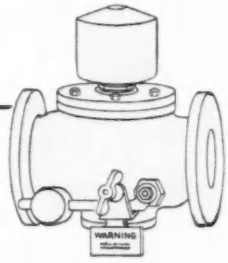


—it's know how that counts!

It's a relief to know that you can place complete reliance on your auxiliary services having everything under control. Magnetic Valves have the 'know-how' accumulated over 25 years in the valve manufacturing business, and they can apply it to your control requirements, whether automatic or remote, for air, oil, steam, coal gas, and other industrial liquids and gases. No help from glands, stuffing-boxes, or driving-shafts is required. Ask for our illustrated literature, which gives details of the full range of Magnetic Valves up to 12 in. orifice.

SPECIAL VALVES DESIGNED *if required*
STANDARD VALVES DELIVERED *ex stock*

THE MAGNETIC SAFETY CUT-OUT GAS VALVE



The Magnetic Safety Cut-out Gas Valve is of the semi-automatic hand opening electrically maintained pattern, ensuring instantaneous and complete closure in the event of current interruption. The valve is of 'packless' construction, and can be supplied in sizes ranging from ¾ in. up to and including 12 in.
Alternative types of hand operating gear are available including hand lever, weight return, and push-up spring return patterns.
The installation of this valve is an essential precaution with all types of gas fired equipment and ensures complete isolation of the gas supply in the event of an interruption of the electrical supply WITHOUT automatic opening when such electrical supply is restored.

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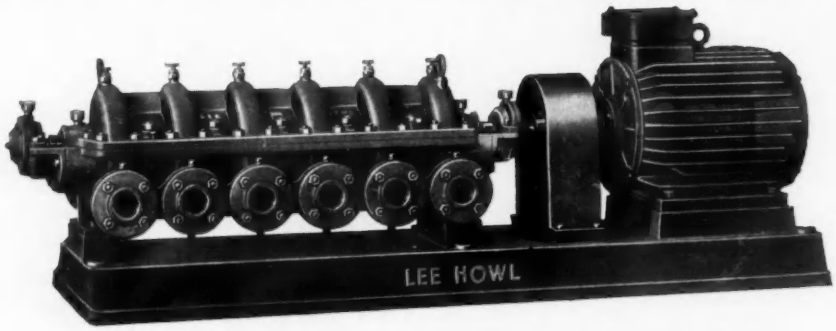

PHOTOGRAPH SHOWS A 2" SIZE SIX CELL PUMP WITH CIRCULAR FLANGES

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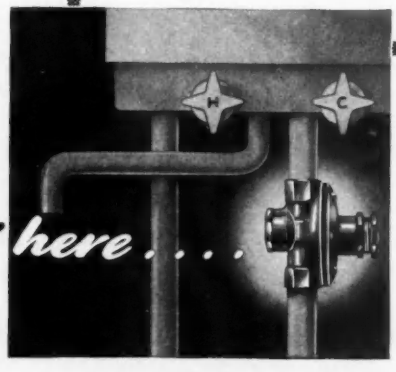
Designed for supply pressures up to 150 p.s.i.; tested to 300 p.s.i. and adjustable between 8 and 20 p.s.i. outlet pressure; it satisfies every requirement of BSS 1250 part 3, 1955.

fit this governor here . . .

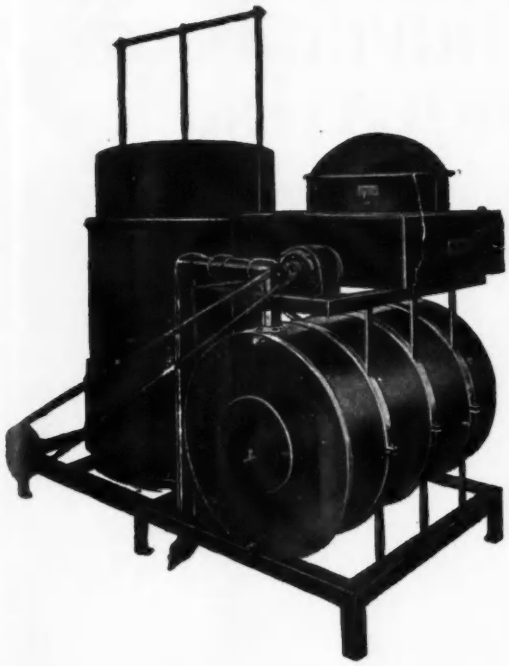


Evered
Gas and Water Governors

EVERED & COMPANY LIMITED, SMETHWICK 40, STAFFS. Est. 1819

AEROGEN GAS GENERATORS

(300 B.T.U's per cubic foot)



Single unit capacities range from 100 to 15,000 cu. ft. of Petrol Air Gas supply per hour. One gallon of petrol produces 500 cu. ft.

The Ideal fool-proof system in commission in thousands of laboratories, industrial processing works, etc., at home and abroad where Town's Gas Supply is not readily available.

Conventional Appliances are easily adapted to coal gas burner performance.

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(Established over half a century)

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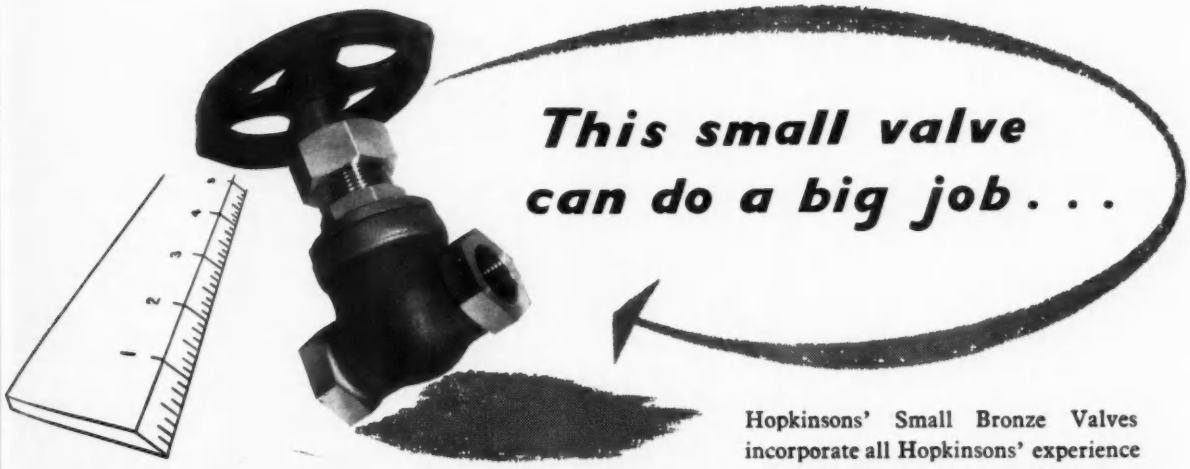

Hopkinsons' Small Bronze Valves incorporate all Hopkinsons' experience of large valves for the most important applications. They are robust and reliable beyond what is usually expected of small valves. To the engineer who values *exceptional* trouble-free service, these qualities will commend themselves. Write for Catalogue 951 - 'Bronze Valves'

HOPKINSONS' SMALL BRONZE VALVES

HOPKINSONS LIMITED · HUDDERSFIELD

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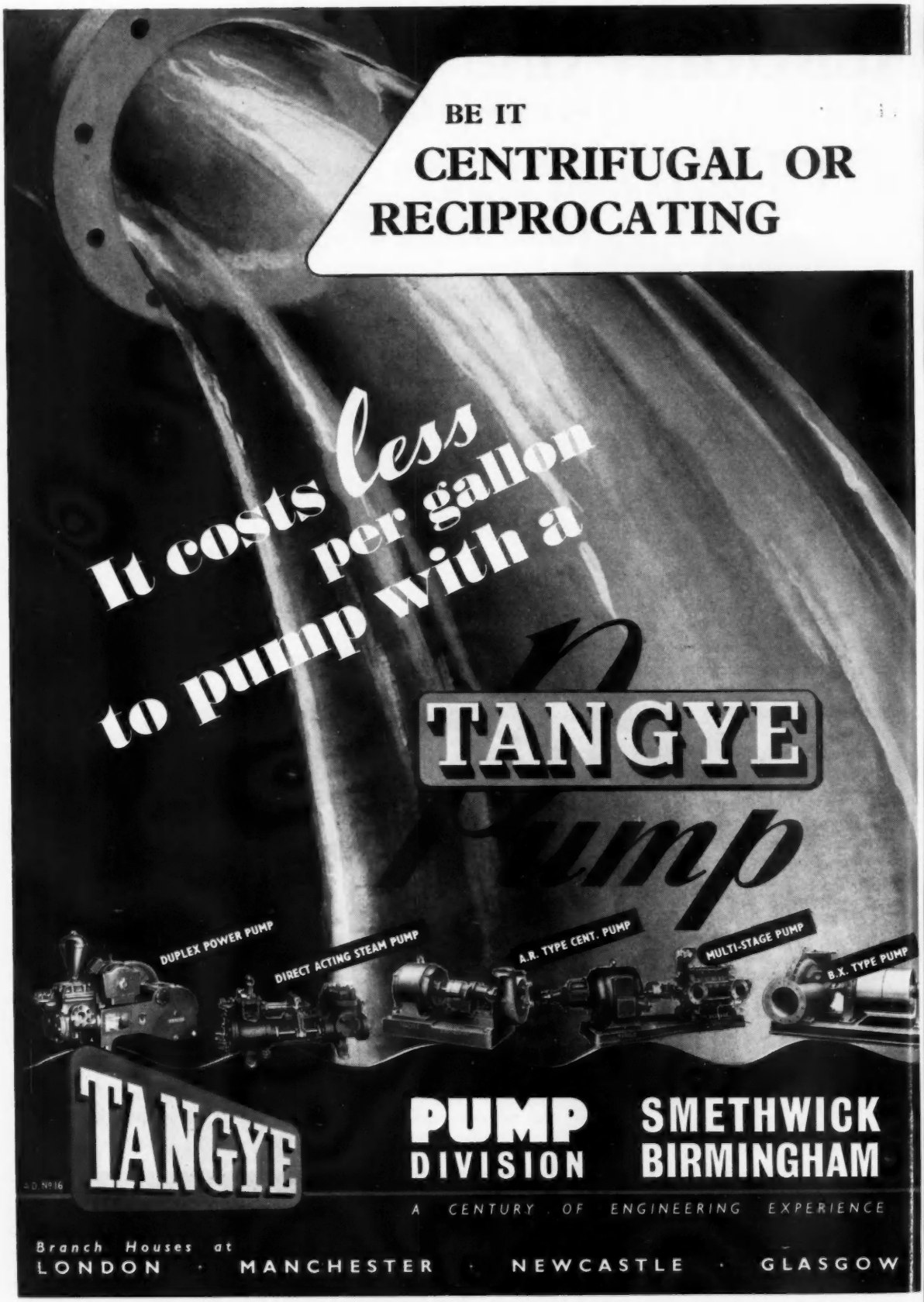
HV 68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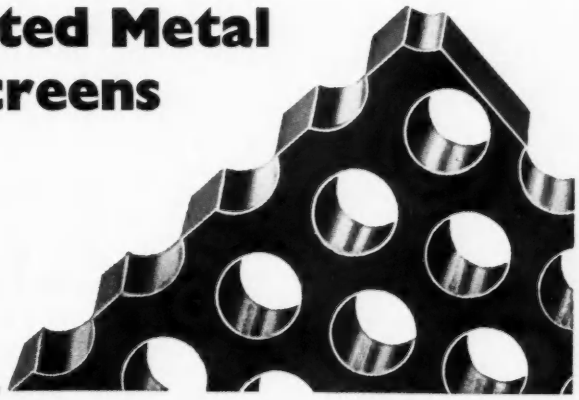

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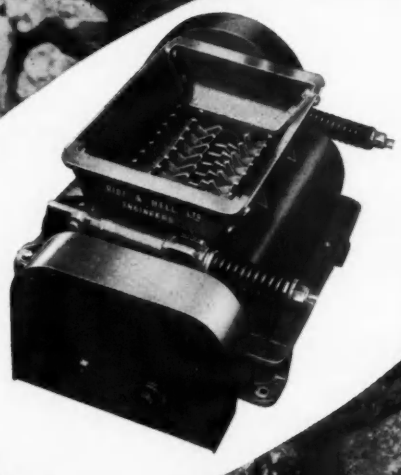
R&B Cokemaster
WILL SIZE YOUR STOCKPILE...



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There could have been no better choice. For the inherent efficiency of STILLITE Mineral Fibre and the wide range of separate insulating materials into which this basic raw material is processed enables a STILLITE insulant to be selected for every application — combining maximum efficiency with economy.

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Spun Iron Pipes & Flexible Joints

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ARE WORKS HYDRAULICALLY PROOF
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Screwed-Gland Flexible Joint : up to 10" dia.
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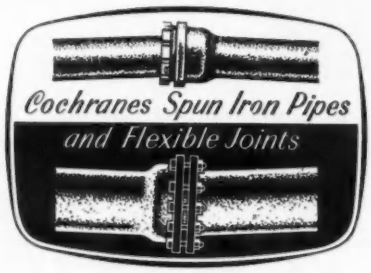

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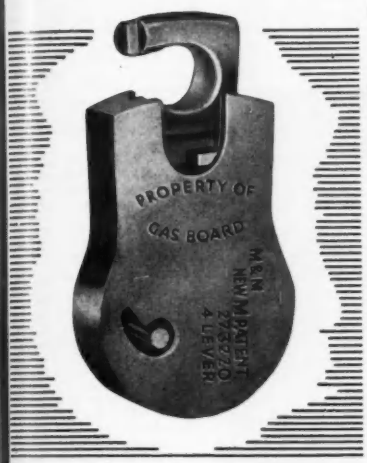

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- DO remember that good quality is cheapest in the long run
- DO take our word for it that our workmanship is consistently good
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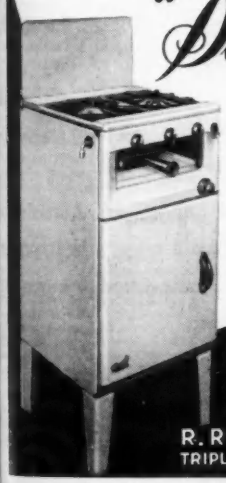

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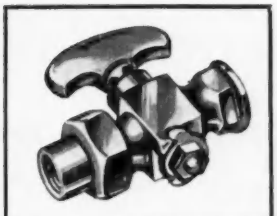

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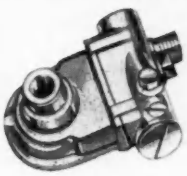

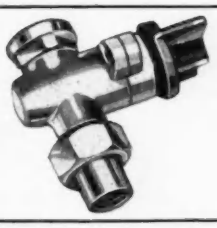

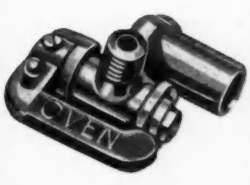

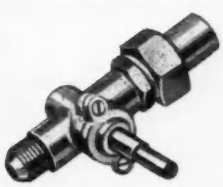

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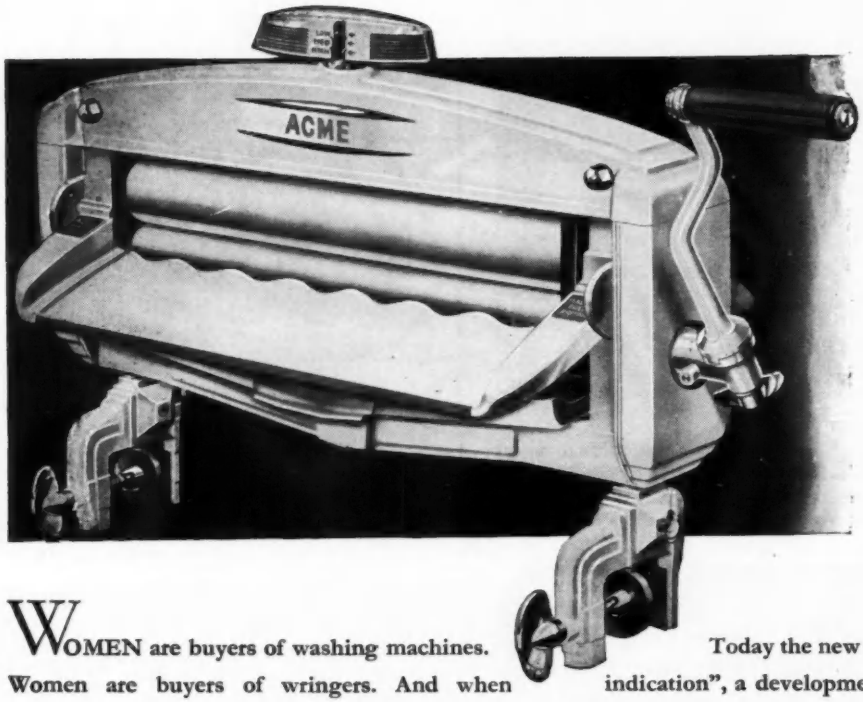

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INDEX TO 'JOURNAL' ADVERTISERS

A

	PAGE
A.C.E. Machinery, Ltd.	
Abbott, Birks & Co., Ltd.	
Ace Wringers, Ltd.	272
Acigen Co., Ltd.	265
Acigraph Co., Ltd.	
Air Control Installations, Ltd.	
Alder & Mackay, Ltd.	
Aldridge & Ranken, Ltd.	
Allen Taylor (Engineers), Ltd.	
Allen, John, & Son (Oxford), Ltd.	
Ascot Gas Water Heaters, Ltd.	
Ascot Gas Water Heaters, Ltd. (F. A. Neat)	
Ashmore, Benson, Pease & Co.	
Ashworth & Parker, Ltd.	
Aspinall's (Paints), Ltd.	
Associated Lead Manufacturers, Ltd.	
Atlas Preservative Co., Ltd.	
Audley Engineering Co., Ltd.	
Automatic Telephone & Electric Co., Ltd.	
Automotive Products, Ltd.	

B

Baker & Church, Ltd.	305
Balfour, Henry, & Co., Ltd.	
Bayley, Thos., (Great Bridge), Ltd.	
Begwaco Meters, Ltd.	
Birtley Co., Ltd.	
Blakeley Firth, Sons & Co., Ltd.	
Bolton's Superheater & Pipe Works, Ltd.	
Brait Colbran, Ltd.	
Bray, George, & Co., Ltd.	
Bray, W. E., & Co., Ltd.	
British Carbo-Norit Union, Ltd.	
British Gas Purifying Materials Co.	
British Jeffrey-Diamond, Ltd.	
British Oxygen Co., Ltd.	
British Paints, Ltd.	
British Rototherm Co., Ltd.	
British Thermostat Co., Ltd.	
British Thomson Houston, Ltd.	
British Tyre & Rubber Co., Ltd.	
British Vacuum Cleaner & Engineering Co., Ltd.	260
Broadbent, Thomas, & Sons, Ltd.	
Broom & Wade, Ltd.	
Brown, J., & Co., Ltd.	305
Bugden, Thos., & Co.	304
Bulmers (Calculators), Ltd.	

C

Cambridge Instrument Co., Ltd.	
Cathodic Corrosion Control, Ltd.	
Causeway Reinforcement Ltd.	
Cementation Co., Ltd.	
Cheltenham Meters, Ltd.	
Chemical Engineering Wiltons, Ltd.	
Cinema-Television, Ltd.	
Clapham Bros., Ltd.	
Clayton, Son & Co., Ltd.	260
Clensol Ltd.	
Clifford Engineering Co., Ltd.	305
Cochrane (Middlesbro') Foundry, Ltd.	270
Cohen, George, Sons & Co., Ltd.	
Concrete Proofing Co., Ltd.	
Consett Iron Co., Ltd.	
Cort, Robert, & Son, Ltd.	
Crane, Ltd.	
Crone & Taylor, Ltd.	
Crosby & Co., Ltd.	
Crossley Bros.	
Crowley Russell & Co., Ltd.	
Curtis, A. L., & Co.	
Cutler, Samuel, & Sons, Ltd.	
Curson, Gerrard & Co., Ltd.	

D

Davenport Engineering Co., Ltd.	
Davey, Paxman & Co., Ltd.	
De la Rue, Thomas, & Co., Ltd. (Gas Group)	
Demolition & Construction Co., Ltd.	
Dempster, R. & J., Ltd.	257
Dempster, Robert, & Sons, Ltd.	Cover I
Denison & Son, Ltd.	
Derbyshire Silica Firebrick Co., Ltd.	
Dew, G., & Co., Ltd.	
Diaphragm & General Leather Co., Ltd.	267
Donkin (The Bryan) Co., Ltd.	Cover II
Douglas, Wm., & Sons, Ltd.	
Drakes, Ltd.	
Dresser Manufactures (England), Ltd.	
Drew, H. B., Ltd.	
Drummond Patents, Ltd.	

E

Eagre Construction Co., Ltd.	
Edgar, Wm. & Son Ltd.	
Eimco (Great Britain) Ltd.	
Elcontrol, Ltd.	
Electroflo Meters Co., Ltd.	
Electrolux, Ltd.	
Ellison, Geo., Ltd.	
Elliott Bros. (London), Ltd.	
Enard, Ltd.	
Essex Partners, Ltd.	
Ether, Ltd.	258
Evered & Co., Ltd.	264
Evode, Ltd.	
Ewart & Sons, Ltd.	
Ewart Chainbelt Co., Ltd.	304

F

Fisher & Ludlow, Ltd.	
Fisher Governor Co., Ltd.	
Flavel, S., & Co., Ltd.	
Fluidrive Engineering Co., Ltd.	
Fowler, John, & Co. (Leeds), Ltd.	
Franki Compressed Pile Co., Ltd.	
Franklin Furnace Co., Ltd.	

G

	PAGE
Gas Purification, Ltd.	305
General Descaling Co., Ltd.	
Gibbons Bros., Ltd.	
Gibbons Heurtey, Ltd.	
Girdex Engineering Co., Ltd.	
Glover, George, & Co., Ltd.	
Glover, Thomas, & Co., Ltd.	276
Godfrey, Sir George, & Partners (Industrial),	
Goodall Clayton & Co., Ltd.	304
Goodyear Industrial Rubber Products, Ltd.	
Grant, Lyon, & Co., Ltd.	
Graphite Products, Ltd.	304
Green & Boulding, Ltd.	305
Gunite Construction Co., Ltd.	

H

Hamilton, A. H., & Co., Ltd.	
Hardman & Holden, Ltd.	
Harris & Pearson, Ltd.	
Harris Engineering Co., Ltd.	
Harrisons (London), Ltd.	
Harvey, G. A. & Co. (London), Ltd.	267
Hattersley & Davidson	
Hawkins, W. T., & Co.	
Hayward, E., & Co., Ltd.	
Hayward, Tyler & Co., Ltd.	
Hick Hargreaves & Co., Ltd.	
Hilmor, Ltd.	
Hills (West Bromwich), Ltd.	
Holman, Michell & Co., Ltd.	
Holmes, W. C., & Co., Ltd.	307
Holst & Co., Ltd.	
Honeywell Brown, Ltd.	
Hopkinsons, Ltd.	265
Horseley Bridge & Thomas Piggott, Ltd.	
Horstmann Gear Co., Ltd.	
Howden, James, & Co., Ltd.	
Hudswell, Clark & Co., Ltd.	
Hughes, F. A., & Co. Ltd.	
Humphreys & Glasgow, Ltd.	274
Hyde, Silas, Ltd.	

I

Ideal Boilers & Radiators, Ltd.	259
I.C.I., Ltd. (Fyffes Fittings)	
I.C.I., Ltd. (Metals Division)	
Inertol, Ltd.	
Infra Red Development Co., Ltd.	
Ingham, John, & Sons, Ltd.	

J

Jeavons, E. E., & Co., Ltd.	
Jeavons Engineering Co.	
Jenkins, W. J., & Co., Ltd.	
Jenolite Ltd.	269
Johnson, C. H., (Machinery), Ltd.	

K

Keay, E. C. & J., Ltd.	
Keelavite Rotary Pumps & Motors, Ltd.	
Keith Blackman, Ltd.	308
Kings Patent Agency, Ltd.	
King, Walter, Ltd.	
Kirkham Hulett & Chandler, Ltd.	

L

Lafarge Aluminous Cement Co., Ltd.	
Laidlaw, R., & Son (Edin.), Ltd.	
Lamont, James H., & Co., Ltd.	
Le Bas Tube Co., Ltd.	
Leeds Fireclay Co., Ltd.	
Lee, Howl & Co., Ltd.	264
Lincoln Electric Co., Ltd.	
Lindsay, Henry, Ltd.	
Lionweld, Ltd.	
Lind, Peter, Ltd.	

M

MacLellan, George & Co., Ltd.	268
Mackay Industrial Equipment, Ltd.	
Macpherson, Donald, & Co., Ltd.	
Magnetic Valve Co., Ltd.	263
Main, R. & A., Ltd.	
Mapel Metal & Pipeline Endurance, Ltd	
McNeill, F. & Co., Ltd.	
Mechans, Ltd.	
Meltham Silica Fire Brick Co., Ltd.	
Messengers & Sons (Birmingham) Ltd.	271
Meters, Ltd.	
Metropolitan Gas Meters, Ltd.	
Metropolitan Vickers Electrical Co., Ltd.	
Midland Iron & Hardware Co. (Cradley Heath), Ltd.	
Milne (Edinburgh) Ltd.	
Mint, Birmingham, Ltd.	
Mitchell Engineering, Ltd.	
Mitchell, H., & Co.	271
Monitor Engineering & Oil Appliances, Ltd.	
Monk, A., & Co., Ltd.	
Morley Products (Padiham) Ltd.	
Murex Welding Processes Ltd.	

N

National Benzole Co., Ltd.	293
National Enamels, Ltd.	
New Conveyor Co., Ltd.	
Newton Chambers & Co., Ltd.	Cover IV
Northern Manufacturing Co., Ltd.	
Norwest Construction Co., Ltd.	
Nu-Swift, Ltd.	299

O

Oxley Engineering Co., Ltd.	

P

Parkinson & Cowan (Gas Meters), Ltd.	
Parkinson Stove Co., Ltd.	
Pass, E., & Co., Ltd.	
Peart, E., & Co., Ltd.	
Peebles & Co., Ltd.	

	PAGE
Perl Controls, Ltd.	
Plenty & Son, Ltd.	
Pointer, Harry (Norwich) Ltd.	
Power-Gas Corporation, Ltd.	
Press, William, & Son, Ltd.	
Pulsometer Engineering Co., Ltd.	
Pyrene Co., Ltd.	

R

Radiant Heating, Ltd.	
Radiation, Ltd.	294,295
Rawlplug Co., Ltd.	
Reavell & Co., Ltd.	304
Ride & Bell Ltd.	268
Roberts, R. E., & Sons, Ltd.	
Robinson, J. H., & Co. (Liverpool), Ltd.	
Royston, Geo., & Sons, Ltd.	
Rozalex, Ltd.	
Russell, R., & Sons	271

S

Salter, T. E., Ltd.	275
Sawyer, Geo. E., Ltd.	304
Scientific & Projections Ltd.	262
Senior Economisers, Ltd.	
Siebe Gorman & Co., Ltd.	
Sieber, Jas., Equipment Co., Ltd.	
Siemens-Schuckert (Great Britain), Ltd.	
Sigma Instrument Co., Ltd.	
Silvertown Rubber Company Ltd	
Simon Engineering (Midlands), Ltd.	
Simon-Carves, Ltd.	
Simon, Richard, & Sons, Ltd.	303
Sisson, W., & Co., Ltd.	
Smith Meters, Ltd.	Facing p. 285
Smith, Thos., & Sons (Rodley), Ltd.	
Spencer-Bonecourt Clarkson, Ltd.	
Sperryn & Co., Ltd.	
Stanton Ironworks Co., Ltd.	
Staveley Iron & Chemical Co., Ltd.	
Stein, John G., & Co., Ltd.	
Stelcon (Industrial Floors), Ltd.	
Stewart & Gray, Ltd.	270
Stewarts & Lloyds, Ltd.	
Stillite Products, Ltd.	269
Stoves, Ltd.	
Strachan & Henshaw, Ltd.	
Stringer Bros.	
Sugg, Wm., & Co., Ltd.	
Supra Chemicals & Paints, Ltd.	
Sutcliffe Speakman & Co., Ltd.	
Sutherland, A. G., Ltd.	308

T

T & T Works, Ltd.	
Tangyes, Ltd.	266
Terry, Herbert & Sons, Ltd	
Thorp, Thomas, & Co., Ltd.	Cover II
Tully Engineering Co., Ltd.	
Turners Asbestos Cement Co., Ltd.	

U

Underpressure Engineering Co., Ltd.	304
United Kingdom Construction & Eng. Co., Ltd.	
Unit Superheater & Pipe Co., Ltd	

V

Vaughan, Edgar, & Co., Ltd.	
Victaulic Co., Ltd.	261
Visco Engineering Co., Ltd.	303
Vulcan Stove Co., Ltd.	

W

Wailes Dove Bitumastic Ltd.	
Wakelin, F. H., Ltd.	
Walker Bros., Ltd.	
Walker, C. & W., Ltd.	300
Walker, Crosweller & Co., Ltd.	
Walkers (Century Oils) Ltd.	
Waller, George, & Sons, Ltd.	
Walter King, Ltd.	
Ward, Thos. W., Ltd.	
Warsop Power Tools, Ltd.	
Weir, G. & J., Ltd.	
Wellington Tube Works, Ltd.	
Wellman Smith Owen Engineering Corpn., Ltd.	
West's Gas Improvement Co., Ltd.	Cover III
West's Piling & Construction Co.	
Westwood & Wrights, Ltd.	
Whessoe, Ltd.	
Whitley Moran & Co., Ltd.	
Widnes Foundry and Engineering Co. Ltd.	
Wilkes, A. H., & Co., Ltd.	
Willey & Co., Ltd.	
Williams, John E., Ltd.	
Williamson, Cliff, Ltd.	
Wilson, George, Gas Meters, Ltd.	
Winn & Coales, Ltd.	
Woodall-Duckham Construction Co., Ltd.	Facing p. 284
Wood, Hugh, & Co., Ltd.	
Wormald Patent Locks Co., Ltd.	

Y

Yorkshire Copper Works, Ltd.	

Agencies	
Appointments Vacant	305,306
Appointments Wanted	
Contracts Open	
Educational	
Fellowship	
Miscellaneous	
Patents	
Plant For Sale	
Publications	

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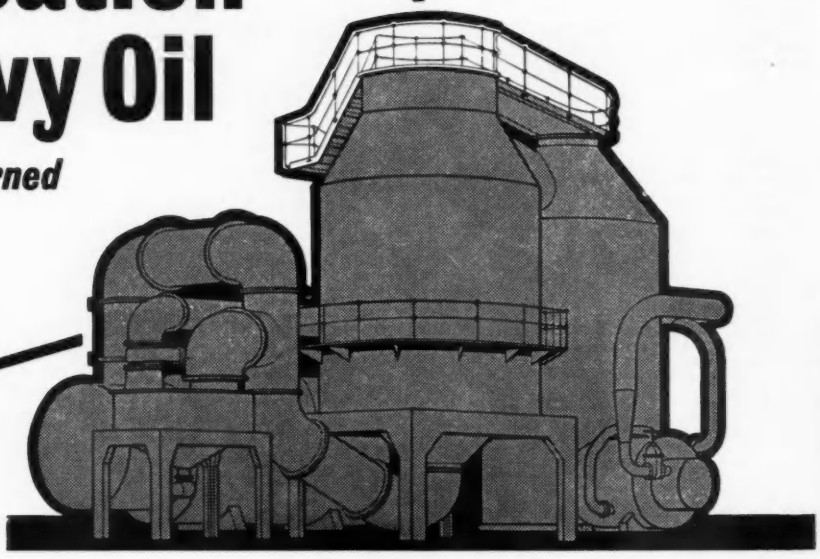

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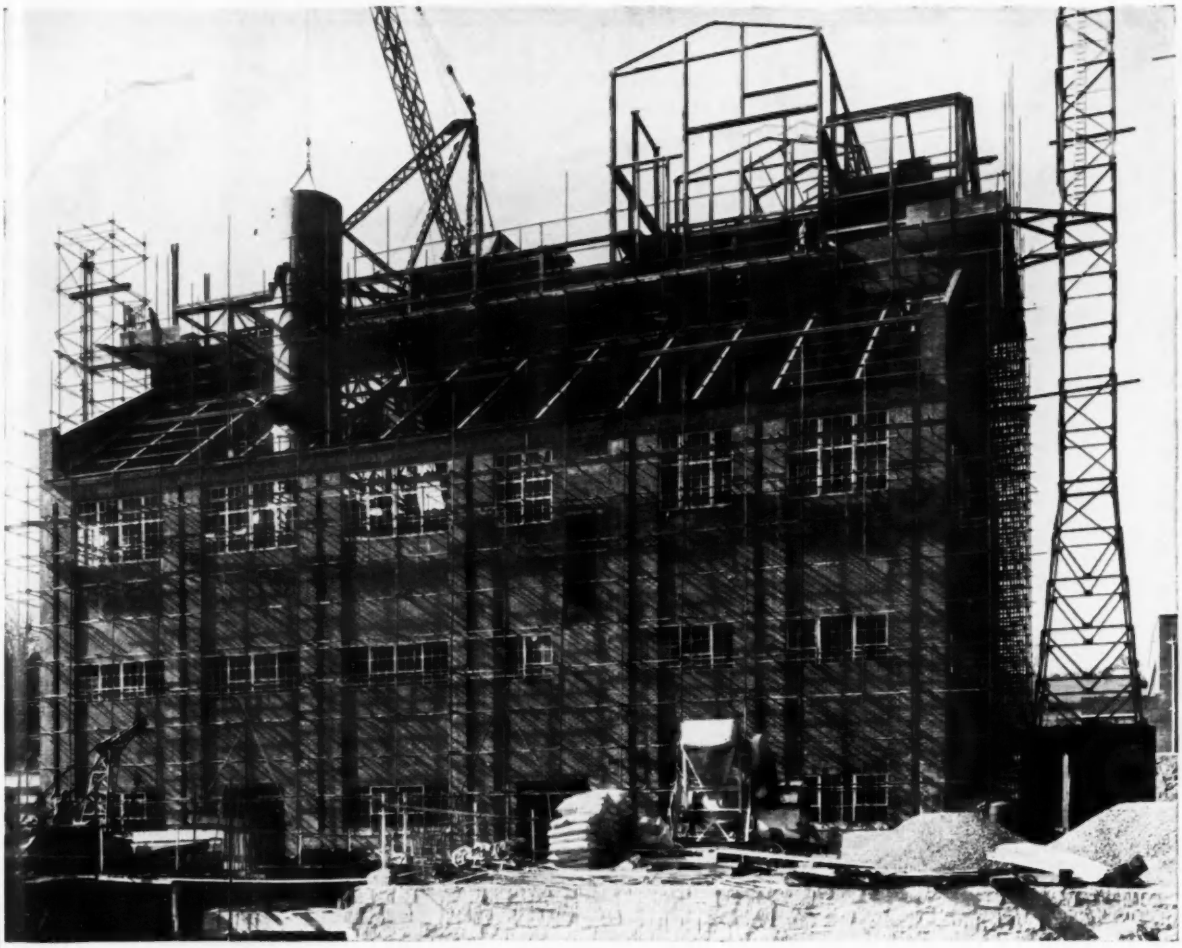

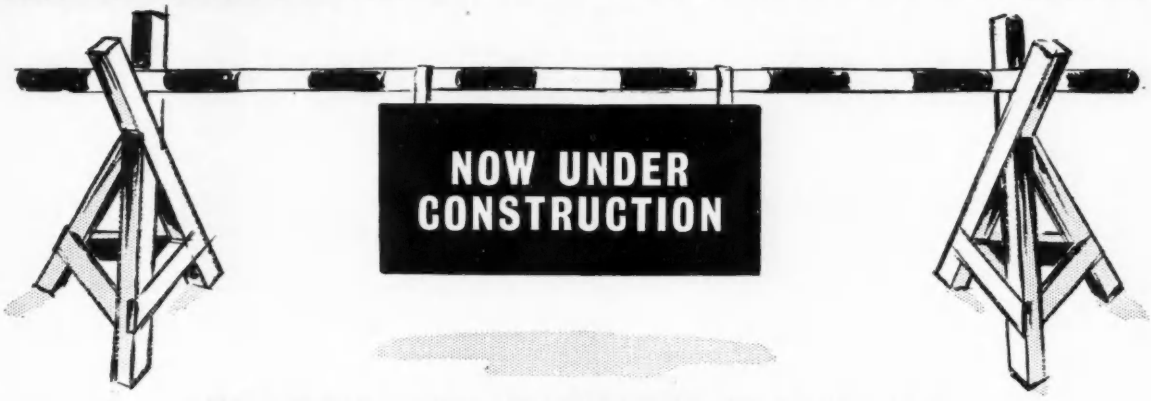

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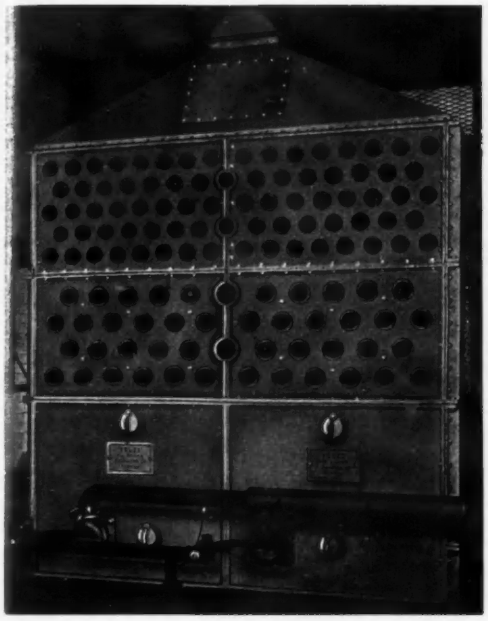

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Gas Journal

VOL. 287 NO. 4855 August 1, 1956

108TH YEAR

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Published by Walter King Limited,
11, Bolt Court, Fleet St, London, E.C.4

Telephone: FLEet Street 2236-7 Telegrams: Gasking, Fleet

CONTENTS

EDITORIAL COMMENT

Oil and the Gas Industry .. 277
The Changing Pattern .. 278
Concern About Coal .. 278
Coal Tar Technology .. 279
A Matter of Know-how .. 279
Esses for Zedds .. 279

SPECIAL ARTICLES

Ten Years of Gaz de France .. 285
Gas on the Continent .. 297

TECHNICAL RECORD

Petroleum Products as Raw Materials in the Manufacture of Town Gas in Britain. By J. E. Davis .. 288
Marketing Gas Coke. By R. A. W. Hollingdale .. 291

NEWS OF CURRENT EVENTS

Personal Notes .. 280
Obituary .. 280
Diary .. 280
Gas Sales Show 1% Increase Over Past Financial Year .. 280
Metrovick Ex-Apprentices .. 280
East Anglian Grid Completed .. 281
Wales Prepares for Year of Challenge .. 282
Attracting Youth to the Gas Industry .. 283
Keith Blackman Orders Increase .. 283
Imperial Continental Gas Association to Pay More .. 283
E.G.B. Hope to Hold New Tariff till 1958 .. 284
Early Closure of Evesham Works is denied .. 284
Firm Has Fifty Jobs to Offer .. 284
North Thames Sports Day .. 284
Scots Undertaking Waging Warfare .. 284
Expected Increase in West Midlands Prices Confirmed .. 284

PUBLISHERS' NOTICE, SEE PAGE 305

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Gas Journal

VOLUME 287. No. 4855. AUGUST 1, 1956. 108th YEAR

Oil and the Gas Industry

ALTHOUGH some primitive sort of oil gasification seems to have existed in the early days of the gas industry—as shown by the existence of an Oil Gas Company in Liverpool in the early 1820's—oil's chief connection with the gas industry up till a few years ago was for upgrading water gas. In fact, since the carburetted water gas process took root in this country in the last 10 or 20 years of the last century, up till the end of the last war, this was the only connection of importance. With the war came the shortage of coal and the uncertain quality of the coal that was being supplied to the gasworks, and so the industry was being encouraged by the Ministry of Fuel and Power to use more oil with the additional incentive of a subsidy which was, however, subsequently removed before the industry was nationalised.

The type of oil used in carburetted water gas was the ordinary gas oil grade which was in demand for use in motor transport diesel engines, and efforts were made to make use of some other grade. As industrial activity continued to increase, the gap between coal production and coal consumption widened until it had reached 20 mill. tons per annum. Experiments were made in carbonising oil by spraying it into a red hot retort, and heavy oils were used for carburetting, and with some success. To try and prevent a coal shortage becoming serious, imports of coal from abroad began to arrive in the United Kingdom in increasing quantities, and last July the Government decided that oil imports must increase until by 1960 petroleum would be contributing to fuel supplies to the extent of one-fifth to one-quarter of that of coal. As coal prices have risen more steeply than oil prices and there is no availability problem with oil, there is some encouragement to use more oil.

With the coming of the Clean Air Bill and the general feeling that something must be done about atmospheric pollution, the problem of finding a smokeless fuel to be burnt in domestic grates came to the fore. The large quantity of raw coal which is being burnt in this way must be superseded by some form of smokeless fuel, either solid or gaseous or even by electricity. But the obvious choice was coke for water heating, cooking where gas was not available, space heating, and where suitable for open fires, together with any refined fuels which the National Coal Board might put on the market in the future. To make full use of oil it must therefore be gasified independently of coke, and coke promoted to a fuel in its own right and sold on its own merits for the most suitable purposes.

Several oil gasification processes, in which the oil is directly gasified by some form of heat treatment and is not used as a means of improving some other gaseous fuel, have appeared in the last few years. One process depended on the products of the incomplete combustion of oil, while the others involved the thermal or catalytic cracking of the oil. The thermal processes, notably the Hall, Jones and the Semet Solvay processes, were all developed in America where there is a demand for a high calorific gas to supplement natural gas supplies, or to supply such gas in districts not served by the gas distribution networks. The catalytic processes on the other hand produce a gas which is so similar to coal gas, both in specific gravity and calorific value that it can be substituted for coal gas in town gas without any change being made to the gas-burning appliances. The two catalytic systems of oil gasification in this country are the O.N.I.A.-G.E.G.I. invented in France, and the Segas process developed in England. However, a Hall process plant is being built in England but its products will need to be diluted. The Semet Solvay process yields a gas of 900 to 1,200 B.Th.U. per cu.ft., but this can be thermally reformed and then, if necessary, upgraded with desulphurised high C.V. gas. Tail gas from oil refineries can be used to supplement gas supplies, but these gases must be reformed before they can take their place in the distribution system. A water gas plant can be used for this purpose. In fact, as we reported last week, the Southern Gas Board has just concluded a 10 year agreement with the Esso Petroleum Company for the supply of tail gases from the oil refinery at Fawley on Southampton Water. Within the next year a 15 in. main 17 miles long will be laid between Fawley and Southampton to supply 17 mill. therms a year of high C.V. gas which will be reformed into a suitable gas for distribution. This will save 115,000 tons of coal a year, together with a saving of gas oil

and heavy oil. Finally, oil may be mixed with small coal and charged into a retort and carbonised more efficiently than spraying on to the coal in the retort, as more effective cracking of gaseous hydrocarbons take place.

Undoubtedly the catalytic process has so far made the greatest impact on the gas industry in Great Britain and for that matter on the oil industry. As well as being interchangeable with straight coal gas, it can use a great variety of feedstocks. In fact, distillation products varying from methane and butane to an oil of viscosity of 920 seconds have been successfully treated. This ability to use a large variety of feedstocks is extremely useful to the oil industry as well as the gas industry as any particular grade of oil products being produced in excess of requirements may be turned over to the catalytic gas plant and gasified, although to be economical the plant must be near at hand. Undoubtedly it is with this in mind that the South Eastern Gas Board have decided to put a Segas plant down at the refinery at the Isle of Grain and have made a long-term agreement with the British Petroleum Company. This plant when completed will have an output of 60 mill. cu.ft. per day.

Perhaps the development which appeals to the general public more than any of these more sober projects is the possibilities of bringing natural gas to Europe from the Middle East oil fields on the one hand, and Venezuela and the Gulf of Mexico on the other. Two possible routes for a pipeline, from the Middle East across Europe to Paris and so to London, or along the North African coast and across the straits of Gibraltar have been proposed; the cost of a therm of gas in Paris or London has been predicted; and the whole has been pronounced as a technical and economic possibility. But so many sigh and say: 'A wonderful idea but, of course, politically impossible.'

The shipping of gas from the American oil fields is also technically and economically possible and it seems (as readers of the 'JOURNAL' will recall from the series by J. Crecca which was concluded in our issue of July 18) that it is only a matter of working out the final details before liquid methane will be on its way to Chicago from the Gulf. Perhaps both projects are a good deal nearer realisation than they would appear to be at first sight.

At any rate, as long as oil continues to be imported crude, to be refined in Great Britain, the connection between these two great industries will continue to grow to their mutual benefit.

The Changing Pattern

THE Clean Air Bill has become the Clean Air Act with no headlines in the national press; nothing more than the three words in a long list of bills to which the Royal Assent has now been given. But it nevertheless marks an appropriate point at which the position of the gas industry should be reviewed. This was done effectively and concisely by Mr. J. E. Davis in the first part of his communication to the World Power Conference in Vienna last month. We reproduce it later in this issue. It merits careful consideration.

One is struck by his very first sentence. 'To the uninformed observer the variety of changes taken place and contemplated in gas manufacturing processes in Great Britain may give an impression of instability, if not confusion.' And who shall blame him? We are not sure, indeed, whether Mr. Davis corrects this unfortunate impression. Should we yet 'question the position of the process of coal carbonisation as the basic process of the gas industry in Great Britain?' What is the logical position of 'oil as an adjunct to coal'? Why should the consumer, particularly the industrial consumer but not only he, pay the costs of gasification when for many purposes he could use the oil direct for many of his heating requirements?

The confusion seems to arise because the gas industry cannot make up its mind whether it wants to make—and sell—coke or whether it still thinks 'it is useful to have available a process which will remove coke from the market.' If the Clean Air Act is eventually as effective as we all presumably hope it will be, surely the main function of oil will be to retain coke for sale, though of course to do that the industry must see that K/C is at a favourable level. Oil may equally retain its function 'as an adjunct to coal,' as a relatively cheap means of meeting the peak load.

Mr. Davis shows what an old story is that of impending coal scarcity but it is curious that he makes no mention, except perhaps in implication, of the continued misuse of the kinds of coal which should be reserved for carbonisation. But probably the section of his paper which will be read with the greatest interest is that under the heading 'The New Function of the Gas Industry' which he defines as 'the seeking of fuel resources which, by their nature and geographical location, are, in their original form, unacceptable to the fuel-using public and by manufacturing or conversion processes passing them through the mains network whereby they are presented to the public in acceptable form and make their contribution to the fuel economy.' He lists a number of these resources and processes. He gives us the impression that in the end the 'new function' must be to supply gas! The 'now strong and insistent demand for clean air' must be met initially by an increased domestic use of coke and it may be that this 'will, for a few years, obscure the major line of future development.' He analyses the availability of fuels in Great Britain with an inevitable emphasis on the growing influence of oil. And he follows, in the second part of his paper, with a brief description of the processes of oil gasification which are now in use or in process of installation in this country.

The final question is, can the gas industry implement the 'new conception' of its task and responsibility without the support of all allied industries and an overall national policy for the utilisation of the remaining coal with whatever other fuels are available?

Concern About Coal

DOUBTS concerning the effectiveness of the Government's plans for coal are implied by the Industrial Coal Consumers' Council in their annual report, published last week by the Stationery Office, price 1s. 3d. The council's main concern during the year has been that costly expedients have had to be employed to meet the rising inland demand for fuel, and that pithead prices have risen by more than 25%. The gap in indigenous fuel supplies could

be narrowed if full advantage were taken of suitable available labour from oversea.

'In the interest of the nation, and for the well-being of the coal industry itself,' it is hoped that the National Coal Board and the National Union of Mineworkers will seek to overcome any remaining obstacles to the adoption of this course and to the achievement of the full benefits of mechanizing the pits.

Above all, the council believes that the most positive way of relieving the situation is for industry to make the maximum use of the facilities offered by the National Industrial Fuel Efficiency Service to secure an all-round improvement in fuel usage. The Government should give every encouragement to install efficient fuel consuming equipment by offering positive financial inducements to industrial consumers.

The Council see 'no practicable alternative to the importation of foreign fuel,' since there is 'no assurance that British coal production in the foreseeable future will be able to keep pace with home needs.'

Coal Tar Technology

IN the *Review of Coal Tar Technology*, covering the period from July to December, 1955, which has just been published, reference is made to a great variety of subjects connected with both the technology of coal tar and its general chemistry and chemical techniques. A review of the latest literature on the subject is packed with information of interest both to the research worker and the technologist.

Crude tars may be dehydrated by high voltage electric currents and this treatment applied to a low temperature tar from a Gray-King essay is mentioned. It seems that from photomicrographs it can be seen that the water droplets coalesce under this treatment. In commercial tar, however, coalescence is prevented by the finely divided solids in the tar, which orient themselves under the influence of the electric field to form barriers between the droplets.

A British patent has been granted to H. Koppers G.m.b.H. for a process of tar dehydration by pressure settling in which tar emulsion from the interface in the separator is mixed with dehydrated tar to produce a water content of not more than 25/30% before being returned to the separator. The previous difficulties encountered with pressure separators are claimed to have been overcome.

From Germany also comes information about the chemical behaviour of aluminium and its powers of resistance to tar and its products. It seems that aluminium is unattacked at ordinary temperatures, and almost so at higher temperatures, by tar. Steam heated aluminium pipes at 195°C. show good resistance to horizontal and vertical tars, in spite of the high phenol content of vertical tar. On distillation there is some attack by both the middle oil at 170°C. to 230°C. and the heavy oil at 230° to 270°C.

The Koppers Company of America have developed a technique for dealing with fires in oil tanks. The material burning at the top of the tank is extinguished by forced circulation of sufficient cooled material from the bottom of the tank to reduce the temperature at the top to below the flash point. This has been successfully used for creosote oil tanks.

Reference is made to a Japanese journal which describes a continuous extraction process for middle or heavy oils by caustic soda in a column 17 metres long with an oil flow of 1.7 to 2.5 cu.m. per hour. Unfortunately only few details are given. Another Japanese journal describes the extraction of phenol with aqueous solutions of sodium salts of sulphonic acids.

Road tar research is being carried out by the Road Research Centre in Brussels. This body is interesting itself in dense tar surfacings on the same lines as the D.S.I.R. Road Research Laboratory and is paying most attention to deformation tests by constant tensile loading and by wheel tracking. It has been found that the results bear out other findings on researches on filler concentrations corresponding to maximum density and minimum voids.

The review is published by the Coal Tar Research Association, Oxford Road, Gomersal, near Leeds, price 7s. 6d.

A Matter of Know-How

LAST week we reported the Southern Gas Board's decision to use surplus refinery gas from the Esso Petroleum Company's refinery at Fawley. We also mentioned that the news broke at a Press Conference at Gas Industry House. This last fact has some significance since to the best of our knowledge no other Gas Board has sought the services of the Gas Council's Press and Information Office when desiring to put over a story. For our part, we applaud the Southern Gas Board's decision to utilise the know-how of Mr. Reg Hinder's department because long experience and good teamwork generally ensure that press facilities are the best possible.

Consider the advantages: Gas Industry House is conveniently situated for the Fleet Street brigade; adequate handouts and, if need be, photographs, are always available; the lubrication without which no efficient machine can operate is there if required; and most important of all, there is on tap the wealth of personal contacts which inevitably 'pay off' when something has to be put over. Taken all round, a story launched through these channels has the maximum chance of survival in the hurly-burly of newspaper columns—a fact which has been proved over and over again when gas publicity has romped home in the propaganda race between the fuels. Press relations is a technique—one might almost say an art—and in our view not all area boards have the knack of making the most of their major developments (which are worthy of a wider appreciation than is afforded by the local Press) in terms of publicity. How much better, therefore, to utilise well-tried machinery which, when all is said and done, exists for this very purpose.

Esses for Zedds

A VICTORY has been won. The Managing Director has hauled down the colours of respectable antiquity and given us permission to substitute *-ise* for *-ize* and *-isation* for *-ization*. He confesses that he was moved to do so solely by the irritation caused by constantly seeing 'nationalisation' in juxtaposition to such as 'carbonization,' and we had to remind him that that exception was accepted because the Mother of Parliaments had gone all modern and used *-isation* in the Statute. He also hopes that the O.E.D., the Encyclopædia Britannica, and 'The Times' will follow our example; of a change in general American usage he is less hopeful, for kinship with respectable antiquity is fashionable in the youthful States. For ourselves, as Editor, we feel a trifle abashed in our hour of triumph, for even the cynical Fowler ('Modern English Usage') remarks that 'The difficulty of remembering which these *-ise* verbs are is in fact the only reason for making *-ise* universal, and the sacrifice of significance to ease does not seem justified.' But then we are not of that era when all the exceptions, such as *bijou, caillou, chou* down to *pou*, and all the French and Latin irregular verbs, were learnt by heart. Our great fear is that sometime in the fevered mind of a sub-editor the old list of exceptions will survive as exceptions and that we shall find ourselves with ill-disguized surprize urging our advertizers to exercize some enterprize in offering their merchandize to the nationalized gas industry. We must keep our ize open.

Personal

DR. J. G. DAVIDSON, at present Chief Financial Officer, Scottish Gas Board, and MR. A. F. POLLOCK, at present Deputy Financial Officer, have been appointed Joint Chief Financial Officers to the Board from August 1. Both have held their present appointments since vesting date. Prior to joining the Board's service in 1949, Dr. Davidson was a Deputy City Chamberlain of Edinburgh. Mr. Pollock served with Edinburgh Corporation Gas Department from 1928, and held the appointment of Assistant Manager (Commercial) in that Department from 1947 until vesting date.

MR. S. POLKINGHORN, General Sales Manager of Compoflex Co., Ltd., 23-25, Northumberland Avenue, London, W.C.2, has been appointed General Commercial Manager, with direct responsibility for both home and export sales. MR. J. PICKTHALL, formerly Northern Sales Manager, is promoted Homes Sales Manager and will be assisted by two newly appointed Assistant Sales Managers—MR. C. V. HADLEY, in charge of the liquids handling side, and MR. H. J. BERGIN, non-liquids handling. The newly formed export department is to be under the direction of MR. A. R. DAVIES, and MR. R. A. USHER is promoted to the newly created post of Service Manager.

MR. D. J. DEWAR, 5, Dykebar Avenue, Knightswood, Glasgow, W.3, and MR. R. REDGATE, 96, Hawthorn Crescent, Arnold, Notts, have been appointed outside representatives by Compoflex Co., Ltd., to cover the Scottish area and South Lincs., Rutland, Leics., Notts., Derby and North Staffs. area, respectively.

MR. R. B. GARSIDE has been appointed Production Assistant to the Gas Engineer of the Wales Gas Board and will commence duties on August 1. Mr. Garside recently returned from Pakistan where he was Gas Distribution Engineer to the Karachi Gas Co. Ltd., engaged on development of the natural gas industry. He was formerly Engineer and Manager to the Thornton Cleveleys and Caernarvon Gas undertakings and earlier held appointments with the Morecambe and Heysham, Grantham, Keighley, Spalding, and Kendal gas undertakings.

MR. S. E. WHITEHEAD, O.B.E., who, as announced by us on July 11, is retiring from the position of Deputy Chairman of the Southern Gas Board, will be succeeded by Mr. A. F. HETHERINGTON, D.S.C., at present Commercial Manager to the Board. Before his appointment to the Southern Board, Mr. Hetherington was Divisional Manager to the Central Division of the North Thames Board.

MR. R. BROWN, Dunfermline, and MISS M. F. FINLAYSON, Kirkcaldy, were presented with gifts at Dunfermline last week in recognition of their 40 years' service in the gas industry.

MR. ALEX. BUJNOWSKI, of the Scottish Gas Board, has changed his name to ALEX. MCMILLAN.

GAS SALES SHOW 1% INCREASE OVER PAST FINANCIAL YEAR

INDUSTRIAL sales of gas increased by 4% in the 12 months ended March, 1956, though domestic sales were down by 1%. Commercial sales increased approximately 2% and total sales of gas showed an increase of 1% over the financial year, 1954-55.

Coal gas made was up by 2% and water gas made decreased by 14%. As a result total gas made showed a decline over the year of just over ½%. However, purchases of gas increased by 11% so that the total of gas made and purchased was up by 1%. Coal carbonised was 1.7% higher and there was a fall of 15% in oil used.

Distribution

In the fourth quarter, January to March, of the financial year 1955-56, sales of gas showed only a very slight increase over the corresponding period of the previous year; this compared with a 5% increase in the first quarter, a 1.7% decrease in the second quarter, and a less than 1% increase in the third quarter. Total sales of gas in the 12 months ended March, 1956, were 1.1% up on sales in the previous year.

Over the 12 months, domestic sales fell by 1%, industrial sales increased by over 4%, and commercial and other sales increased by rather more than 2%.

The average revenue per therm for the period was 17.7 pence compared with 16.6 pence in the year ended March, 1955.

Production

Production of coal gas in the 12 months rose by 2.2% against an increase of 1.7% in the quantity of coal carbonised. Water gas production fell by 14% and materials used in water gas making —coke, gas oil, and heavy oil—also fell by approximately 14%. In the 12 months, gas made in oil gasification plants increased by 17%, and heavy oil used in these plants amounted to 4.2 mill. gal. compared with 3.6 mill. gal. in the previous year.

The quantity of surplus gas purchased from coke ovens and oil refineries increased by 11%.

By-Products

Coke production increased over the 12 months ended March, 1956, by 3%, although in the fourth quarter of the year coke made was approximately at the same level as in the fourth quarter of 1954-55. The sales of coke throughout the period remained about the same as in the previous year. Coke breeze made fell by 2% over the period, whereas the production of crude tar and crude benzole increased by 2% and 1% respectively.

Appliances

Sales of gas fires decreased by 4%, water heater sales decreased by 39%, sales of wash boilers fell 21%, and sales of washing machines fell 26%. Cooker sales were down by approximately 234,000—29%. Refrigerator sales, however, showed an increase between April, 1955, and March, 1956, of 5%. In the case of all these appliances, except refrigerators, it was the reduced hire purchase sales which had the greatest influence. The cash sales of gas fires, water heaters, and washing machines showed an increase over the previous year's cash sales.

Capital Works

New gas-making capacity of 40 mill. cu.ft. was brought into use in the first three months of 1956. This made the total of new plant brought into use in 1955-56 up to 104 mill. cu. ft. compared with a total of 137 mill. cu.ft. in 1954-55.

An increase of 523 miles in the length of new mains laid between January and March, 1956, brought the total mileage of new mains laid during the 12 months ended March, 1956, to 2,475 miles. This figure is less than that for the financial year 1954-55 by 1.6%—40 miles.

The total number of employees in the gas industry at the end of May, 1956, was 2% below the figure for the end of May, 1955.

Obituary

MR. EDWARD ARNOLD THURMAN, of Grantham, has died of a heart attack at the age of 51. Formerly on the staff of the old Grantham Gas Company, he was latterly accounting officer for the Grantham district of the East Midlands Gas Board.

MR. ROBERT COOPER, a Director of the Chatteris Gas Co., Ltd., for some years until nationalisation, has died at the age of 80 at his home, 8, Park Street, Chatteris, Cambs.

Diary

September 4.—EAST MIDLANDS G.C.C.: Nottingham Chamber of Commerce, Smithy Row, Nottingham. 11.30 a.m.

Metrovick Ex-Apprentices

Metropolitan-Vickers Electrical Co. Ltd. is revising its 'Register of Ex-Apprentices and Ex-Trainees.' The last edition, containing 10,000 short biographies, was published in 1950, and forms asking for present particulars have been sent to all those whose addresses are known to the Company. Any ex-apprentice or ex-trainee who has not received a form (or has not yet replied to one) is invited to write to Mr. R. F. Marshall, Manager, Education Department, Metropolitan-Vickers Electrical Co. Ltd., Trafford Park, Manchester, 17.

EAST ANGLIAN GRID COMPLETED

THE NEW EAST ANGLIAN GAS GRID—WHICH WILL SAVE ABOUT £84,000 A YEAR IN PRODUCTION COSTS ALONE—WAS OFFICIALLY COMPLETED LAST FRIDAY BY MR. DAVID RENTON, PARLIAMENTARY SECRETARY TO THE MINISTRY OF FUEL AND POWER, AT A CEREMONY AT EAST BERGHOLT, SUFFOLK.

Gas for the grid will come from only three major works, and with the completion of the grid it has been possible to close 12 of the smaller, less economic works.

More than 95,000 consumers in 26 towns and villages are being supplied from the grid, some of them being given a gas supply for the first time.

The grid covers 125 miles extending from Chelmsford in the south-west, through Colchester and Ipswich, to Saxmundham, Leiston, Thorpeness and Aldeburgh in the north-east, with branches to several towns and villages en route.

The three production centres are Chelmsford, Colchester and Ipswich.

Across Country

There have been substantial savings in the cost of laying the main as a result of the decision to take it as much as possible across open country instead of along the public roads. Excavation costs have been reduced, re-instatement charges avoided, the line of the main shortened, and the speed of laying increased. This method also ensured that there was no disturbance to traffic or residents.

The ceremony was no formality for Mr. Renton. On the contrary, encouraged by Pressmen, Gas Board officials, and enthusiastic workmen who probably felt they had earned a rest, the Member of Parliament for Huntingdonshire had to expose his shirtsleeves and 'make the joint in the last pipe of the main.' In fact, the workmen executed the technicalities, and all that remained for Mr. Renton was the heavy stuff—under the mid-day sun.

Sir John Stephenson, C.B.E., Chairman of the Eastern Gas Board, spoke enthusiastically before the ceremony. He said: 'Today concludes some seven years of work, and the grid which will be completed was one of the first major projects approved by the Board in 1949.'

Advancing Sales

At vesting date the Board had been faced with a large deficit on its revenue account, no less than 44 of the 91 undertakings it took over being in the red. 'It was quite obvious to us then, as we laid our plans, that we must concentrate the manufacture of gas at the larger works and close down as soon as possible the small uneconomic works of which, in an area such as ours with its largely rural characteristics, there were many.'

Sir John said that sales of gas had advanced rapidly, in some cases doubling in the course of five years. Large supplies had been given to factories in small towns which would have been impossible before, and even factories near the route of the mains in the open country had been covered.

'This is but the end, as it were, of a beginning,' he added. 'For we have planned in due time to extend this grid still further. A similar grid is being constructed in our Cambridge Division and a third in Norfolk.

Tribute

Mr. Renton, emerging from the trench with beaded brow, paid tribute to the industry's policy of integration. He also congratulated the people connected with this particular project, and added: 'If I may say so I greatly appreciate the courtesy of the unions in allowing me to work without a union card.'

Mr. Renton mentioned especially Mr. W. T. Purcell, Trunk Mains Engineer, Ipswich Division, until his recent retirement, for his important part in the work.

Mr. R. Whiting, General Manager, responded.

Mr. Whiting, who has only held his present position since July 1, was previously Divisional Engineer. Mr. W. J. Collins Garrard, who retired recently, had been General Manager of the Ipswich Division since vesting day.

The planning and preparation of drawings and specifications for all the contracts had been carried out by the Ipswich Divisional staff of the Board and the execution of nearly all of it was under the supervision of Mr. Purcell.

Except for one small project, one firm of contractors—Harry Pointer (Norwich) Ltd.—undertook all the main laying.

The spun iron pipes, mechanical joints and special castings were by Clay Cross (Iron and Foundries) Ltd.

Low Pressures

Trunk mains have been designed to work at comparatively low pressures. At present gas is pumped at 5-10 lb. per sq. in. and most of the system is planned to operate at pressures up to 20 lb. per sq. in. The last section, the 14-in. main from Ipswich to Colchester, is suitable for operation at 30 lb. per sq. in., and at this pressure some 10 mill. cu.ft. of gas per day can be transmitted.

In the long branches to supply small districts, repumping stations at strategic points have been installed, avoiding need to raise initial pumping pressures at principal stations.

The first compressors installed were at Colchester. At the time it was not possible to obtain delivery of compressors quickly enough and so two machines were moved from Ipswich. They are steam-driven machines of the Connersville type. Later, duplicate reciprocating compressors were installed at Chelmsford, one machine being steam driven and the other having a diesel engine.

There are, of course, compressors at Ipswich of considerable capacity and small units have either been installed or adapted at Braintree, Halstead, Kelvedon and Leiston.

Delivery of gas into the holder station is controlled by volumetric governors and holder cut-offs, while a number of governors have been installed in road-side kiosks to control supplies to small districts without holder stations.

As in past years, the Wales Gas Board played its part at the International Musical Eisteddfod at Llangollen, by installing the catering equipment. Approximately 55,600 cooked meals were served during the week, and 16,000 cups of tea or coffee per day. The gas output from the Llangollen undertaking increased by 8.22% over the previous year. Our picture shows some of the equipment used, with (lef) Mr. H. Blythe of Colwyn Bay and (right) Mr. K. A. Mann, Manager of Llangollen undertaking.

Wales Prepares for Year of Challenge

1958 FESTIVAL AND EMPIRE GAMES IN PRINCIPALITY

MUCH interest is being shown in the programme the Welsh Economic Development Council is preparing to enable Welsh industry and commerce to make a full contribution to the 1958 Festival of Wales and derive the maximum benefit from the enterprise.

The programme includes exhibitions and displays of Welsh craft and manufactured goods, a Welsh Fashion Fair, 'Welsh weeks' featuring window displays of Welsh goods in the shopping centres of Wales, and the production of a high quality trade promotion publication describing Welsh industrial achievements and potential and the wide range of goods made in Wales for export. Manufacturers and craftsmen in Wales are also to be encouraged to produce special souvenirs for sale to Festival visitors.

The year 1958 will be one of challenge and opportunity for Wales, for in addition to staging the Festival, Wales is to be host to the 6th British Empire and Commonwealth Games.

This combination of events provides a spring-board for intensifying the Welsh drive for increased trade while the country is in the spotlight of world publicity.

The Development Council is giving a lead in encouraging Welsh industrial and commercial organisations to take the fullest advantage of what is undoubtedly a once-in-a-lifetime opportunity to promote world-wide interest in the products and industrial development facilities Wales has to offer.

Views Invited

All organisations interested in the economic welfare of Wales are to be invited to give their views on the trade promotion programme for 1958 at the Development Council's national Conference to be held at Cardiff on October 12 next.

The industries of Wales are to be given an opportunity of equipping the Welsh team competing in the 6th British Empire and Commonwealth Games with clothing made from materials made in Wales.

Although the Welsh Team competing in the 1954 Games in Canada numbered only 24, their uniform was acclaimed to be among the smartest on the field.

Not content to rest on these laurels, the organisers of the Welsh team to compete in the 1958 Games are already taking action to improve the uniform and make it truly representative of Wales and Welsh industry.

The Team competing in 1958 will be the largest Wales has ever entered for the Games, and will, it is hoped, number some 200 men and women.

CHAMPION BADGE

Pictured above is a badge now awarded annually by the Cardiff undertaking of the Wales Gas Board which last year initiated a competition for regular transport drivers. The badge is affixed to the winning driver's vehicle. In addition, he receives a prize of £10. The first annual vehicle parade was staged last month when the final award of marks was made. The event was judged by Mr. F. A. Mason, Chief Engineer of the Western Welsh Omnibus Co., Ltd., and the competition was won by Mr. W. E. Rees of the Mains and Service Department.

The support of manufacturers of textiles and clothing in Wales is to be sought, and the British Empire and Commonwealth Games Council for Wales has asked the Welsh Economic Development Council to set up a Committee to advise on the provision of personal equipment for the Welsh Team. This invitation has been accepted.

This unique Festival of Sport will give Wales an opportunity to show the world that she has a distinctive national culture, outstanding scenic beauty, an infinite variety of industries, and a genius for hospitality.

Organisations representing every aspect of Welsh life are responding to the call made by the organisers of the Games, for co-operation in giving a balanced picture of the contribution Wales is making to the British Empire and Commonwealth and to the world in the fields of culture, industry and sport.

Dr. Clyde Williams, an eminent American scientist and research executive of Welsh descent, will address the Trade Promotion Conference and Second Annual Dinner of the Welsh Economic Development Council at Cardiff on October 12, 1956. Dr. Williams is the president and director of Battelle Institute, an international industrial research organisation that is playing an increasing role in British technology.

Mr. A. G. B. Owen, Chairman of the Owen Organisation, has joined the Executive Committee of the Welsh Economic Development Council, the organisation formed in 1954 to develop existing industries, attract new ones, and expand Welsh trade at home and overseas.

An attractive showroom recently opened by the Abercarn undertaking of the Wales Gas Board to serve the small mining community of the Newbridge district. The premises were originally used as an ironmongery shop. Well designed, well-lighted, and well conducted showrooms such as this can do much toward bringing the virility and underlying strength of the gas industry before the public eye.

ATTRACTING YOUTH TO THE GAS INDUSTRY

W.M. GAS BOARD PLAN CONSIDERABLE EXPANSION OF EDUCATION CENTRE

CONSIDERABLE expansion to their education and training centre is being planned by the West Midlands Gas Board.

The Board's main education centre is at Warwick, where two rooms at the old Warwick gasworks have been converted for this purpose, and accommodation is provided at hotels in Warwick and Leamington. The Board thus have virtually a staff college.

Seven attractive illustrated descriptive brochures on education and training have been produced (see picture), four by the Board, two by the Gas Council, and one by the Institution of Gas Engineers.

The Board's programme of education and training for 1956 opens on September 30 and runs through to December 13.

KEITH BLACKMAN ORDERS INCREASE

NET profit for last year of Keith Blackman, Ltd., amounted to £280,386 against £262,347, the annual report shows. Dividend on ordinary shares of 15%, less tax, is proposed, absorbing £51,750 (same), while £118,481 is carried forward (against £112,755 brought forward last time).

The year under review had been particularly heavy and exacting for all concerned in direction, management, and production, said the Chairman, Mr. Donald S. Woodley, at the annual general meeting.

All their works continued to operate at top pressure. Orders booked were very substantial and the further increase which had taken place in the volume of orders received so far this year as compared with a similar period last year was indicative of the continuing demand for the Company's products.

GROUP PROFITS UP

PROFIT of the Group, after taxation, for the year ended December 31, 1955, amounts to £285,818, against £256,390 in 1954, the annual report of Lancashire Dynamo Holdings, Ltd., reveals. Final dividend is proposed of 7%, absorbing £72,497 (£73,918), making with the interim 11% for the year, absorbing £113,924 (£99,628).

New Address

The Canadian Gas Association, advise that their address is now: 6, Hayden Street, Toronto 5, Ontario, Canada.

Imperial Continental Gas Association To Pay More

PROFIT for the year before taxation was £1,045,000, against £875,000 in the previous year, Sir George Jessel, Bart., Chairman of the Imperial Continental Gas Association, stated at the recent annual general meeting. Net profit was £486,000, compared with £430,000.

'Last year,' continued Sir John, 'we had an additional £32,000 of profit relating to previous years, which allowed us to pay a special dividend of 1% in addition to an Ordinary dividend of 13%. Our proposal to increase the Ordinary dividend to 15% is, therefore, really 2% more than for the previous year. Of the 15% we have already paid 4% as an interim dividend.

'Although we have some useful general investments, our interests are overwhelmingly in the gas and electricity supply business. We have made investments in public utility undertakings in Canada and the U.S.A., but it is still to our Belgian subsidiary companies that we look for the greater part of our prosperity; 75% of our revenue came from Belgium.'

Stating that there was a surplus over present book values of £5,808,000, made up of investments in subsidiary companies, £5,271,000, and investments in allied companies, £537,000, Sir John continued:

'We have decided to increase our book values by these amounts. Our capital reserves have risen by a similar amount and, with the approval of the Capital Issues Committee which we received this morning, we propose to capitalise £5,600,000 of those reserves by 100% bonus issue of stock; that is to say, we shall propose to you, at an extra-ordinary general meeting which will be convoked in the autumn, the free issue of £1 of stock for every £1 now held.

'Such a capitalisation of reserves does not, of course, affect our profits but we are of the opinion that it is desirable that the issued capital of the Association should be brought into closer relationship with the value of the assets than is at present the case.

When the capital is doubled by a 100% capital bonus, and if the distributable profits remain the same, the dividend of 15%, which we are recommending to you this year would become 7½% on the new doubled capital. I cannot say what the profits of the current year will be but, at the present moment, they are satisfactory and, unless some unexpected troubles befall us, it looks as though we shall be able to recommend an 8% dividend on the doubled capital when we submit the accounts to you this time next year.'

Among new companies registered in Scotland is that of the Scottish Gas Pension Trust, Ltd., described as a company limited by guarantee, and not having a share capital, to undertake the duties of corporate trustee, to hold the investments of the moneys of any superannuation scheme established or maintained by the Scottish Gas Board, etc.

E.G.B. Hope to Hold New Tariff till 1958, then Reduce Prices

SAYING that increased costs during the previous year amounted to £1,267,500—of which the latest rise in the price of coal accounted for £503,000—Sir John Stephenson, C.B.E., Chairman of the Eastern Gas Board, recently gave details of the Board's proposed tariff revisions to a meeting of the Eastern Gas Consultative Council.

Net additional costs, after allowing for increased revenue of £461,500 from sales of coke, amounted to £806,000 a year, continued Sir John, and to help meet this it was proposed:—

(1) To increase flat rate prices by an average of 1.2d. a therm, adding about 2¼d. a week to the average domestic gas bill.

(2) To amend the two-part tariff for domestic consumers by altering the commodity rate in respect of gas consumed in excess of 100 therms a quarter to two-thirds of the district flat rate price.

(3) To increase the discounts on the non-domestic block rate and reduce the number of blocks.

(4) To increase by 1d. a therm gas consumed in excess of 100 therms a quarter under the bread baking tariff.

Once these revisions were effected, it was hoped not only to hold gas prices until March, 1958, but thereafter to reduce them, said Sir John.

The revisions would produce an additional £663,000 revenue and the difference between this and net increased costs would be met by internal economies and increased efficiency.

After consideration, the Consultative Council resolved that the proposals be accepted.

FIRM HAS FIFTY JOBS TO OFFER

WHILE many Midland manufacturers are laying off labour, a Leamington firm is appealing for over 50 more workers to expand production of a new gas cooker. The company is Sidney Flavel and Co., who have made gas appliances in the town since 1777.

'If we can get the workers we hope to double the production originally envisaged,' said one of the officials last week. 'We are not a very large firm, but we have never sacked a worker, introduced short time, or had a strike in our 179 years' history.'

Early Closure of Evesham Works is Denied

A RUMOUR that Evesham gasworks is to be closed in the near future and the staff declared redundant was denied recently by Mr. Tallentire, Divisional Engineer and Manager of the Cheltenham Division of the South Western Gas Board.

He said: 'There are no immediate plans to close Evesham gasworks. Under the Board's long-term plans the works will eventually be closed, but I cannot give any date for this, nor even make a forecast.

'The works will not be developed in any way. The useful life will be taken out of the plant and the town will receive its supplies from the network completed by the Board.'

Gas was first introduced in Evesham in 1836. The works was the property of the Corporation until nationalisation.

Residents of Cookstown, Co. Tyrone, left their homes when fire in the Great Northern Railway yard threatened the gasworks recently. The blaze was brought under control by Cookstown and Dungannon Brigades after three hours.

SCOTS UNDERTAKING IS WAGING GAS WARFARE, IT SEEMS

ALLEGATIONS that fumes coming from St. Andrews gasworks were taking paint off seats in the Eastern Cemetery were made by Councillor Armit at a meeting of the local Town Council. He added that he had met visitors walking in the direction of the gasworks who were compelled to turn back because their children felt sick because of the fumes.

He said the Council had already raised the matter with the Scottish Gas Board. A progress report had been promised last year, but it had not yet been forthcoming.

Provost Fraser said the situation was not as serious as Councillor Armit made out, but he thought the Gas Board should be asked to follow up the correspondence with a report.

It was agreed to ask the Gas Board for a report.

EXPECTED INCREASE IN WEST MIDLANDS PRICES CONFIRMED

RECENTLY foreshadowed increases in gas prices in the West Midlands were confirmed at a meeting of the Area Gas Consultative Council in Birmingham last week by Mr. G. le B. Diamond, Chairman of the West Midlands Gas Board. Average increase will be 1½d. a therm, adding about 3½d. a week to the normal consumer's bill.

Mr. Diamond called attention to some of the additional commitments which had to be met by the Board since the last revision. The extra cost in a full year would be: Coal, £1,034,650; freight charges, £139,100; wages, salaries, and pensions, £690,950; capital charges, £94,000 making a total of just under £2,000,000. Against that there were increased coke prices amounting to £615,700 thus giving a net figure of £1,343,000.

Internal Economies

He also called attention to the summary of the Board's internal economies and increased efficiency amounting altogether to £546,000. The new tariff, he said, would bring in £519,000 in the current financial year, and it was anticipated that there would be a deficit of £39,000. In a full year the increases would amount to £1,384,000.

None could tell what would be the outcome of this year in the West Midlands because the industry had taken a hard knock through the disturbance in the motor industry. Austins alone took as much gas as the town of Walsall and some of the other manufacturers took as much as the town of Kidderminster.

The Board's proposals were approved with one dissentient.

NORTH THAMES SPORTS DAY

THE annual inter-area sports day and fair of the North Thames Gas Sports Association took place recently at Iver Heath.

Members of sports clubs in Group 3 and the South Western Division of the Board with their friends and families enjoyed fine, if cloudy, weather and a wide variety of races as well as a tug-of-war.

There were numerous side-shows and a brilliant exhibition of handicrafts, horticulture, and culinary art by sports club members.

As in previous years the prizes were presented by Mrs. L. C. Hansen, whose husband is a part-time Member of the Board. Senior officers from all over the North Thames Area were present, including Mr. Brian Wood, Secretary to the Board and Chairman of the North Thames Gas Sports' Association.

Our picture shows Mr. L. W. Quick, of Uxbridge, receiving the award for the best handicraft exhibit.

TEN YEARS OF GAZ DE FRANCE

Past Experience and Present Faith Ensure Future Success

OUR French contemporary, the *Journal des Usines à Gaz*, devoted its June issue to a celebration of the tenth anniversary in April of the promulgation of the Law of Nationalisation of Gas and Electricity, setting up 'Gaz de France, Service National.' In his brief foreword, M. Le Guellec, President of the Conseil d'Administration, a body with definite executive powers, writes:—

'Thus was founded, in a unique mould, the amalgamation of the gas undertakings which, for more than a century, had constituted the gas industry of France.

'Gaz de France, at its birth, had at its disposal the capital represented by installations some of which were very modern, but all worn by the experiences of the hard years of war. It had also at its disposal the wealth represented in engineers and technicians of all ranks whose knowledge and experience were reinforced by a magnificent spirit of tradition.

'The task to be accomplished was immense since it was necessary to re-organise the whole and that at a moment when the gas industry was confronted with an unprecedented technical revolution.

'Ten years after its inception, Gaz de France has, little by little, realised its personality, industrial and commercial. Ten years are only a stage; tomorrow will pose new problems and demand new efforts, but the experience of this decade and the faith which we have in our future will assure our ultimate success.'

There are two introductory articles, one by M. G. Combet, Director General of Gaz de France, the other by M. Kuhn de Chizelle, Joint Director General.

A Crisis of Growth

M. Combet remarks that the industry has passed through a veritable crisis of growth during this short period of its history. It was formerly a localised and specialised industry. Spread over the country, gasworks equipped with retorts of differing types, served for the most part isolated undertakings. In 1946, Gaz de France came into possession of 546 gasworks, approximately equal to the number of undertakings. Of these 27 works were producing annually more than some 350 mill. cu.ft. of gas; 439 works, four-fifths of the total number, were producing less—about 70 mill. cu.ft. In the new economic conditions the costs of running and the charges for maintenance became prohibitive. Since 1956, 203 works have been shut down.

The second point noted by M. Combet is the decline in the use of retorts specially constructed for the production of gas. Their place is being taken by the coke oven especially in the bigger works. The carbonising industry tends to use the same form of plant whether the principal product is to be gas or coke.

M. Combet's third observation is that Gaz de France is now purchasing large volumes of a variety of gases, gas from coke oven plant and steelworks, natural gas, gas from oil refineries. Main collecting pipes are now transmitting over long distances, from Lorraine to Paris the distance is 2,175 miles, and pressures rise to some 60 atmospheres. In the problem of storage he notes the proposal of a subterranean storage at Beynes in the Paris region. The question of interchangeability of gases of different characteristics has been studied by M. Delbourg.

Growing Competition

His fourth observation relates to the growing competition of gas with alternative fuels, in the domestic field for cooking and water heating with butane and electricity, for heating, large scale cooking, and in the industrial field with fuel oil, coal and propane. Consumption will continue to increase if costs and selling price can be reduced. The consequences of the development in the near future of natural gas from Lacq are beginning to be appreciated.

This transformation of the gas industry will raise questions of finance and of the education and training of personnel, particularly of its re-arrangement following the closing of the smaller works and the modernisation of installations generally. 'The rhythm of the profound modification of the gas industry in France tends to a crisis. It is not easy to predict what form our Industry will take in 1966.'

M. de Chizelle in a brief introduction comments on the collaboration between Electricité de France and Gaz de France recently regularised by law. The distribution of the two forms of energy is entrusted to a mixed commission manned by representatives of the two services. The commission's object is the national interest. 'It is no longer, despite the time-honoured expression, in the retort-house but rather in the field of distribution that the fate of Gaz de France will be decided.'

These introductions are followed by six main articles covering that number of the principal aspects of the industry.

Distribution

The question of distribution is dealt with by M. Julien Merle, Director of the Mixed Distribution Commission of Electricité, and Gaz. M. Merle presents his subject with some diffidence because from its nature he can only present an incomplete picture and because he cannot avoid some repetition of the matter included in other contributions dealing with specific aspects of the industry.

'Distribution Mixte' was already implicit in the law of nationalisation. A new stage in its development was passed in the creation at the beginning of 1955 of, (1) a Direction of Distribution, consisting of the General Directors of the two establishments to which were attached some months later staffs to whom, within the distribution department of Gaz de France, since 1952, had ben entrusted the technical questions of distribution properly speaking, and (2) a Distribution Committee charged with the administration of the several units of distribution in order that this might be carried out in the most economic and effective manner in conformitly with the overall economics and financial policies of Electricité and Gaz de France.

M. Merle deals in general terms with the commercial and technical organisation of the industry which are dealt with in more detail in succeeding articles.

Production and Transmission

M. Jaques Delaruelle is Director of the production and transmission. Developing from the original Delegation for Gas set up under the nationalisation law were three departments appointed to administer exploitation, equipment and research, respectively. The Department for Equipment prepared the plan of modernisation for the gas industry.

The Coke-Gas Commission, particularly charged with the programme for carbonisation, investigated the work to be undertaken in the repair of war damages, essential renewals, and the equipment indispensable in the development foreseen in the sale of coke and gas within the framework of the policy determined by the General Commission of the Plan and controlled by the Commission of Investment in the basic industries.

The essential objective of this programme was to assure, continuously and without fail, the satisfaction of the needs of users, while providing the means of production within the energy-policy determined by the authorities with the object of securing the maximum of autonomy in France in the production of metallurgical coke. It envisaged the construction of a large number of new coke-making plants which would be integrated into a general plan prepared conjointly between the coal, steel and gas industries with the disposal of surplus gas to gas consumers. From these new coke plants transmission would be arranged to those gas undertakings which could be economically connected with them; for the rest, plans for extension and modernisation would be carefully considered.

M. Delaruelle sets out in some detail the achievement of the first stage of the Plan of Modernisation. It consisted largely of new coke-oven plants and extensions of existing ones, particularly in the Paris region, with modernisation and

extensions in all regions. In the South-West the emphasis was on natural gas with oil-cracking plants, including that at Cahors, of which much has been heard in Britain. At the end of 1952, when this first stage was complete, a new department was set up with the title Direction of Production and Transmission of Gas, charged with the preparation and execution of work under these headings, with the negotiation and preparation of contracts for the purchase of raw materials and gases from external sources, the sale of the coke available and the management of the personnel of the larger works.

The second stage of the programme was put in hand. In the main it followed the first but with a trend of policy to the purchase of gas from other French coke-oven plans and to the utilisation of residual gases from oil refineries; it looked to the use of petroleum products in those undertakings where, by reason of their distance from the coal mines, the cost of coal gas was higher than that of gases obtained by the cracking of fuel oil, and than propane and butane. In the field of transmission, the biggest achievement is the main from Nancy to Paris designed to carry over 35.5 mill. cu.ft. of gas per day; there is also the laying of 625 miles of steel mains for transmission of gas at high pressures.

Evidence of Modernisation

After 10 years of nationalisation, the effort of modernisation is indicated by the following figures: 203 works have been shut down, either for connection to the main arteries of transmission, or for transformation into stations for the distribution of propane or propane-air; three new coke-oven plants have been constructed and three others have been considerably extended; more than 170 miles of high pressure main have been laid; the tonnage of coke available for sale by weight of coal carbonised has been raised from 41.5 to nearly 50%; while the index of productivity has been raised by about 25%.

It appears certain that the gas industry will play a big part in the national energy system, on the one hand by the quality of the services which it offers to its clients and on the other in its rôle as the distributor of the gases available to it; further it will continue to be an essential element in the marketing of coke in France. It is, however, by no means easy to foresee the means of reaching this position; they are far from being defined, and the complexity and multiplicity of problems presented to technicians to elaborate a new plan of equipment are such that it is impossible to discern the essential lines to be pursued. When the need for metallurgical coke led the authorities to undertake the programme of coke-oven construction set out in 1947 the cost ratios were such that the cost of coal gas was higher than that made from other raw materials and the more so as the growing need for coke led to the importation of coking coals from abroad at prices higher than French coals. At the same time, French oil refineries are offering to Gaz de France incondensable gases and liquid products (propane, butane, fuel oil, and distillates) for which there now exist reforming apparatus of high thermal efficiency and capital cost lower than the traditional means of gas production.

If one adds to that the disturbance of the market for gas which will inevitably follow the development of the new deposits of natural gas in the South West, one can appreciate the extent of the studies to be undertaken before arriving at concrete proposals for the construction of manufacturing plant and the laying of mains for transmission.

Research

M. Antoine Bolzinger, Director of Research and New Techniques, and M. Robert Delsol, his co-Director, are well known in this country. Immediately following nationalisation a new research department was set up, the Direction des Etudes et Recherches Gazières (DERG) under the direction of Prof. Ribaud. It took over the laboratories of the Cie. du Gaz de Paris. Divided into six divisions operating in several dispersed services it at once proceeded with the project for the central establishment at Landy which is now in process of construction. In the meantime the existing laboratories have been reorganised and even extended.

DERG continued with the work of the great laboratories of the former companies and had, independently of pure research, filled the rôle of a central laboratory for the work of control and special tests requiring the equipment and personnel found normally in the laboratories of a large gas undertaking. In 1952, in view of the accelerated evolution of the industry, a Service of New Techniques was created with the duty of realising on an industrial scale the new techniques investigated or proposed by DERG or by the constructors serving the industry and of supplying the necessary information, advice and technical assistance to the constructional side of the industry. The new service, operating with a small staff, utilised, for its tests, the services of personnel placed at its disposal by the undertakings interested, by DERG, and often by the constructors themselves. On the departure of Prof. Ribaud, the two services were re-constituted in the one Direction des Etudes et Techniques Nouvelles (DETN) under M. Bolzinger and M. Delsol. It possesses administrative autonomy with a staff in two technical divisions, a central body and three working departments, the testing and research centre at Landy changed with questions concerning the production and treatment of gas and its derivatives together with transmission and distribution, a similar centre at Gennevilliers with those relating to the utilisation of gas and the stamping of appliances for approval, and the service of industrial scale tests of new techniques which takes into the undertakings the results obtained in the laboratories or to the stage of semi-industrial pilot plants. (We have already published details of the new centre at Landy.)

Passing rapidly in review the principal achievements and researches of the 10 years, these authors mention, in the field of gas production, the catalogue of coals giving their principal properties relating to gas and coke production; in the utilisation of petroleum products in gas production, an apparatus for the autothermic reforming of propane, known as 'Four P2,' which is in operation in a number of undertakings; several improvements in the GEIM process; the adaptation to our industry in close collaboration with the Sté. Gaz à l'Eau et Gaz Industriels and l'Office National de l'Industrie de l'Azote, of the Onia-Gegi cyclic process for the production of town gas, then of rich gas from heavy oil, as well as the continuous Onia process for the autothermic reforming, with a catalyst, of propane: the technical realisation of residual gases in the experimental station of Sète which is the first French gasworks directly connected with a petroleum refinery; the adaptation to the use of refinery gases in the Carbofax, Stein et Roubaix MS17, P2. GEIM, and Hasche processes which were tested and put into operation at this station. The necessity to develop peak load plant is leading to the study of the catalytic cracking of different hydrocarbons. Tests on the gasification of heavy oil on a contact mass in movement (the thermofax process) are at the industrial scale while other tests on a fluidised mass are in progress.

Gas Treatment Researches

Several researches have been carried out in the treatment of gas. A new technique of detarring, using the Aerojet-Venturi process, has been put into operation at Châlons. Tests of some processes of liquid purification have been carried out in pilot plants. Dry purification on the industrial scale is being tested using pelleted materials with sulphur recovery, and on the pilot scale with fluidised materials. Special treatment of gas for transmission over long distances has been worked out.

In the field of derivatives research has been conducted into the reactivity of coke, the continuous recovery of benzole, paints with a pitch basis, protective covering of gas mains, the distillation of tars from oil gas, the alkination of benzene, the purification of naphthalene, the fractionation of phenolic oils and pyridic bases, the treatment of effluents notably by the dephenolising of ammoniacal liquors by biological means; and finally, the underground storage of gas.

In transmission and distribution the appearance of large quantities of natural gas, coke oven gas and tail gases from refineries in different regions constitutes the third factor in the evolution of the industry. The first researches were directed to an improvement in the essential formulæ and the establishment of a rule of calculation which is now in current use for the determination of losses in transmission. The rôle of long lines of transmission in the storage of gas has been studied. Problems relating to the material used in the transport of gas at high pressures, the formation of dusts and gums in distribution systems, the cathodic and other means of protecting the steel in transmission lines and other work with the object of controlling gas-tightness of such systems, have been investigated. In the distribution of gas an electrical calculator has

been designed for the study of networks. A process of injecting alcohol into the gas in periods of cold weather has been operated to prevent ice in service pipes. New materials (plastics, asbestos-cement, and aluminium) have been tested in distribution networks, with new methods of jointing. Finally, new techniques of distribution under pressure have been experimented with.

Much work has been done in the improvement of existing appliances for the utilisation of gas and new designs investigated in both domestic and industrial fields. Important progress has been made in the field of interchangeability of the several different gases now available. Methods worked out (we may add, by M. Delsol himself) have been rapidly standardised in France and other countries.

'This brief enumeration gives only a faint idea of the diversity of problems which have been posed to the research workers of Gaz de France.'

Commercial Activity

Ten years of the commercial activity of Gaz de France are surveyed by M. Georges Robert, its Commercial Director. In these ten years sales of gas have increased by 50%, an annual growth of the order of 4.5%.

To show the relation between the growth of industrial production (excluding buildings) and that of the sales of industrial gas, M. Robert points out that while the index of overall production rose to 178 in 1955, against 100 in 1947, the index of sales of industrial gas rose to 210. Similar growth is exhibited in the field of domestic utilisation and in the number of consumers.

M. Robert analyses the complex pattern of prices and costs and particularly the complicated system by which selling prices of gas, coke, and residuals are controlled, in relation to the fiscal system of the country. These details are almost entirely of local interest, but they show that Gaz de France has contended valiantly and with signal success against great economic difficulties.

The legislation covering the nationalisation of the industry has restricted its commercial activity in the establishment and maintenance of internal installations, but it has not prevented the establishment of friendly agreements between the distribution service and outside suppliers. Principal among these was the National Protocol signed in January, 1950, between Gaz de France and the National Federations of Contractors, Contractors and Salesmen which defined the broad lines of collaboration. This was confirmed by local agreement, and the proportion of consumers covered by the agreements has grown to 90% at the end of 1955. Publicity campaigns in the 'four main elements of domestic comfort,' cooking, hot water supply, space-heating, clothes washing, have achieved notable successes. The sales of cooking appliances rose from 130,000 in 1951 to 240,000 in 1955 (250,000 in 1954), space-heating from 60,000 to 70,000 in the same period.

Troubled History of Tariffs

M. Robert outlines the troubled history of tariffs which, except for a brief period of freedom in 1951-52, have always been subject to State control. 'In spite of the rigour of these conditions arrangements have been made to harmonise, if not prices, at least the tariff structure.' Recent studies having shown that the two-part tariff was the most rational, the application of such tariffs has recently been decided upon in the case of domestic space-heating.

Problems of the financial administration of Gaz de France are surveyed by M. Jacques Certeux, Director-General of the Financial and Juridical Services. The nationalisation of the former companies, of which a large number dealt with both gas and electricity, necessitated a phase of common administration between the two services. At its birth Gaz de France found itself in a critical situation. A regulation of prices, applied to all production, but pressing with a particular rigour on gas, fixed in 1946 a coefficient of selling prices at less than three times that of pre-war while the cost of coal, its main raw material, was multiplied by the coefficient seven. In such conditions no enterprise, public or private, would have been able to balance its accounts. The treasury of Gaz de France had to be supported by that of Electricité de France and periodic subsidies had to be solicited from the Government.

M. Certeux outlines the complicated series of fiscal and financial measures which were adopted to solve this problem. It was not until the end of 1951 that Gaz de France achieved effective financial autonomy. 'There is no doubt that this has been one of the conditions of the expansion of our enterprise in the last few years. But financial autonomy signifies full responsibility.' And M. Certeux describes briefly the steps taken to consolidate the position. The present situation is still difficult. In 1951 tariffs had been adapted to the level of gas-making costs, but these tariffs have been again blocked, and even lowered, in spite of the advance in wages and the costs of supplies which press direct on the cost of gas—so that the Service National has again to face extra-contractual charges resulting from the insufficiency of its tariffs.

Education and Training

The history of education and training is outlined by M. Georges Nérot, Secretary-General of Gaz de France. On nationalisation the efforts of Gaz de France were directed to the adaptation of existing institutions to the requirements of the new organisation. Modernisation and extensions were carried out in establishments for the training of apprentices at the National Centre for Gas Instruction at Versailles and at Lyon la Mouche the construction of a regional centre to which were transferred the activities of a workshop-school set-up during the war by the former Cie. du Gaz de Lyon. The curicula were revised and the recruitment and training of teachers organised.

The courses of technical education created by the Association Technique de l'Industrie du Gaz in 1936, comprising two years at school with monthly scrutiny of memoirs submitted by students, have been maintained and completed by a progression of designs spread over two years, the teachers noting and returning to the students designs thus corrected, manual work at the beginning of the second year at school and a course in the workshops lasting three weeks reserved for the assiduous students and proceeding to the award of a professional certificate. Training in administration also involves two years at school following the course also set up by the A.T.G. in 1946.

Courses for Sales Staff

Commercial courses for sales staff in contact with clients were set up by the A.T.G. in 1929. They have been continued but with concentration each year on the subject corresponding to the campaign then being run by the Commercial Direction of the industry. The courses are held in Paris for the week coinciding with the annual Exhibition of the Domestic Arts.

The first courses for workmen's promotion to staff appointments were instituted by the electrical professional body in 1943. Their extension to the gas industry was decided in 1947. Their object is to give to every employee who merits it the possibility of rising to a post of control even if he has suffered a handicap at the outset of his career, and to increase the productivity of the industry by taking advantage of the practical experience of the employee even though he lacks the theoretical education to qualify him for a staff appointment, whether technical or administrative.

La Semaine Gazière (Gas Week) was created by the A.T.G. in 1921 to complete or improve the knowledge of the young engineers attached to the gas undertakings. It takes the form of eight lectures, of which at least six deal specifically with definite aspects of gas engineering. One or two lectures deal with problems of a general nature, technical or even economic, or of some other industry with points in common with the gas industry. Two or three visits to works are included in the programme. Every year Gas Week is attended by about 300 young engineers from the different regions of France.

The A.T.G. also instituted in 1930 the Centre of High Gas Courses for the instruction of young engineers in gas engineering practice. These studies cover a period of ten weeks divided into three sections so that students would not be too long in Paris away from their undertakings. These courses continued in that form until 1955 when it was decided to divide them into two centres, one of which will be a School of Application, addressed to young engineers who have just entered the gas industry, while the other will be reserved to those who have been in staff appointments for several years.

Along with technical education the two industries, gas and electricity, have joined in an experiment in the study of human problems. Following the success of the first sessions in 1954, the study centre at Cebazat has been in operation since that

date, in sessions of two weeks with about 13 sessions per annum. In each session 18 students work in two groups of nine with an advanced student as leader to each. The results are deemed very satisfactory, and it is proposed to set up a second centre in the environs of Paris.

Another problem arises out of the displacement (redundancy) of the personnel formerly employed at gasworks which, following the policy of concentration, are now closed down. A new centre has been set up at Lyon la Mouche to re-train these persons in other duties. Education in this field is also provided at the National Apprentice Centre at Versailles in four sessions annually of a total period of ten weeks in groups of about a dozen employees. The programme includes elementary instruction in the technicalities of propane and its use in different forms, a manual course in the operation of the station and the modifications of consumers' appliances, and a commercial course covering the elements of the knowledge necessary in prospecting for clients and of appliances generally.

Abstract of a Paper Presented at the Fifth World Power Conference at Vienna

Petroleum Products as Raw Materials in the Manufacture of Town Gas in Britain

By J. E. DAVIS, O.B.E., F.R.I.C., M.Inst.Gas E., F.Inst.F.

CHIEF TECHNICAL OFFICER, SOUTH EASTERN GAS BOARD.

To the uninformed observer the variety of changes taking place and contemplated in gas manufacturing processes in Great Britain may give an impression of instability, if not confusion. It is impossible to comprehend the rapidly mounting interest in oil gasification and other methods of using petroleum in the service of the British gas industry without an understanding of the great changes which have taken place and are continuing to take place in the fuel economy (using this term in its original and wider sense) of Great Britain. Because such an understanding is for many purposes of greater value than a knowledge of technical details, this paper is divided into two main parts, the first of which reviews the changing pattern of fuel usage and availabliity, while the second part deals with the several methods of employing petroleum products for town gas supply.

The Basic Process

Until recent years few would have questioned the position of the process of coal carbonisation as the basic process of the gas industry in Great Britain. It is true that by 1930 it had ceased to have this dominant position in the gas industry of the United States of America, but there oil has for most of this century been the fuel most readily and cheaply available. In Great Britain, as in most of Europe, fuel has meant coal, and gas manufacture has meant the carbonisation of that coal to yield gas, tar and coke. As long as coal of good gas-making quality was freely available no change was expected or, indeed, was necessary. Not in all localities could the coke made during coal carbonisation be sold for a price higher than that paid for the coal from which it was produced, but this was not always of any great consequence provided the gasworks could obtain coal at a price sufficiently below that paid by the public to whom the gasworks was selling its gas and its coke. For many years carbonising plant remained relatively simple and therefore low in capital costs and was capable of standing a considerable amount of rough treatment, exemplified by the alternation of temperatures and charging schedules to meet seasonal variations in gas demand. Labour supplies were plentiful and alternative summer employment could be found by those men who came as seasonal workers to the gasworks in the winter.

In a paper to the Fifth International Gas Conference held in Brussels in 1952, the author pointed out the way in which changing social conditions had drastically altered the classic picture. Much of the story of changing conditions was related in that paper and it is necessary now only to recount such portions as are relevant to the extending use of petroleum products and the various parts which they have come to play. The former story ended with the positions as it was four years ago and in the intervening period events have moved rapidly.

For coal carbonisation today to be a process attractive for investment there must be a market for coke at a price substantially higher than the price of coal. The requisite ratio (sometimes known as the K:C ratio) is variously estimated as 1.4 or 1.5, and the majority of coke oven installations would expect the higher figure to be in view before new installations could be justified. City gasworks, on the other hand, with certain happy exceptions, have found themselves unable to establish a ratio much in excess of 1.0 and have at times had great difficulty in preventing the K:C ratio from falling below unity. When this threatens to happen it is useful to have available a process which will remove coke from the market and so take advantage of its low price by using it as a raw material in gas manufacture.

Until 1939 this was the major use of the water gas process, which, of course, when using coke alone produces a gas of too low a calorific value and therefore needs oil for enrichment. It was at this point and in this manner that petroleum materials, in the form of gas oil, made their entry into the gasworks at the beginning of the century. The therm in oil was relatively costly, being at that time 4-5 times the price of therm in coal. Nevertheless, the value of having a means to avoid a coke surplus, which would either have to be stored or disposed of at a low price, was sufficient to ensure the presence of carburetted water gas plant on the majority of gasworks. The features of this process which differentiated it most from carbonisation, namely, the relatively low capital investment per unit, of thermal output, the lower labour costs and the greatly increased flexibility, were understood as general advantages, but it was not until the immediate post-war years that the economic value of these advantages was fully appreciated. The full appreciation was assisted by the increasing capital investment required for new and more elaborate carbonising plant, increasing wage rates, and shortage of labour. Together, these influences led to an increasing proportion of the total gasmaking capacity being installed in the form of carburetted water gas plant, until today, in the neighbourhood of London, 50% of the total capacity is in this form. Carbonising plant is worked as nearly as possible on continuous base load, a load factor of 8-384% being regularly obtained, and the difference from 100% represents little more than the unavoidable loss of time arising from repairs and renewals. To the extent that these repairs can be undertaken in the summertime, they do provide for some seasonal variation in gas output, but the remainder of the seasonal load is taken up entirely by carburetted water gas.

The Peak Load Process

These facts are recapitulated here in order to show the accepted position of the one major oil-using process on gasworks shortly after the end of the war. But even at that time a new use for oil was being studied. The same thought which had led to the increasing use of carburetted water gas had

also revealed the importance of special provisions against extreme peak demands. Today, the conception of 'peak-shaving' is a familiar one and the 'underlying solution to the problem is the employment of processes in which the raw materials element of cost may be high, provided the capital investment per unit of output is sufficiently low. It was in this context that the peak load process described by Dr. M. MacCormac, of the Gas Light and Coke Company, was developed. At about the same time two other influences were at work. One of them was the rapidly increasing demand for town gas at a time when works were short of plant because they had not been able during the war to carry out fully the repairs and renewals which would have been done in normal times. A difficult situation was met by increasing the declared calorific value of the gas and using abnormally large quantities of oil on water gas plants. This particular situation was regarded as temporary and so it proved to be, for new gasmaking plant was built in due course. The second factor was the shortage of coal, and in order to conserve the limited coal supplies, carbonising plant was used less and water gas plant more. Indeed, with a view to building up stocks of coal for the winter, water gas plant was often used during the summer months so that there might be sufficient coal for the carbonising plant when it was brought into action to meet the winter load. This, of course, represented a complete reversal of the natural and appropriate rules of the two processes, but was accepted as a temporary expedient to mark a passing phase. This phase did not pass.

Coal Scarcity

It is now more than 80 years since Professor Stanley Jevons warned the British Association for the Advancement of Science that there would come a day when the abundant supplies of excellent coal upon which the industial life of Britain was founded would become, at a point far short of exhaustion, more difficult to get and of falling quality. Mostly these warnings were unheeded. Certainly before 1914 and for much of the period between the two world wars, the potential production of coal was so far in excess of demand that warnings of shortage came to be regarded as unwarranted prophecies of gloom. When the real shortage began to press there was a tendency to blame it upon mismanagement or incompetence or some other human failing. Only very slowly has it become clearly accepted that the annual rate of coal production in Britain is limited by the proportion of the total manpower that can be allotted to coal mining, that this quantity of coal is insufficient for the nation's needs, and that even to maintain it at its present level will become increasingly difficult. What has been said about shortage in quantity applies also to quality. The recognition of these facts has been slow, but with their recognition has come a new interest in alternative fuels, while at the same time there is coming into being a new conception of the task and responsibility of the gas industry.

The New Function of the Gas Industry

In its early days, when the convenience of gas as a fuel was unrivalled by electricity or oil, the gas industry could demand coals of special quality, and from a well stocked supply select those which it preferred. Then it could be said that the function of the gas industry was to manufacture and sell gas, because gas alone could give the service of lighting, cooking, water heating, which was required. Today, no one of these services is the monopoly of gas, although it still remains first favourite for certain of them. Rather is it one among several methods of supplying fuel and energy in clean and convenient form. It now appears that the availability of several ways of obtaining and using fuel with accurate control and minimum effort is likely to give the gas industry its latest and biggest task.

However potentially useful a material may be, it cannot be marketed unless its characteristics render it acceptable to the purchaser and user. The convenient fuels—gas, electricity, oil—have very many technical points in their favour. Coal and coke have relatively few but they have, in the past, had the commercial merit of relatively low cost. Now, even this is passing, and with a rising standard of living the technical advantages assume a greater importance. Notwithstanding the promise of nuclear power as a major addition to the all too sparse fuel resources of the world, and notwithstanding the fact that nuclear energy is most likely to be supplied to the public, at least primarily, in the form of electricity, it will be some generations before the world, and particularly Europe, can afford to lose the very large contribution which coal now makes. Yet if coal as such is unacceptable, it must be made acceptable. If not, the demand upon oil and electricity could cause a breakdown of these supplies while coal remained unused, yielding a fresh example of 'scarcity in the midst of plenty.' This thought gives the key to a great deal of activity which the gas industry in Europe has displayed in recent years. The new function of the gas industry may be defined as the seeking of fuel resources which, by their nature or geographical location, are, in their original form, unacceptable to the fuel using public, and by manufacturing or conversion processes passing them through the mains network whereby they are presented to the public in acceptable form and make their maximum contribution to the fuel economy. Of this essential nature is the collection and distribution of coke oven gas. To this end also is the search for natural gas, the collection of methane from mines and other sources of combustible gas. The same aim is evident in the strenuous efforts being made to gasify coals of all kinds, whether they be coking or non-coking coals, coals small in size or high in ash, coal of the type which more completely mechanised mining may produce, and low grade coals which the power stations will no longer need when their load is carried by the energy of nuclear reactions. Into this picture comes, in Great Britain at least, the now strong and insistent demand for clean air. Initially, the demand must be met by an increasing domestic use of coke, and it may be that in Great Britain the need to find some immediate alternative to the burning of coal on the open fire will, for a few years, obscure the major line of future development. It would be more than unfortunate if the initial solution were to confuse or obstruct the long-term aim, and in this connection it is apt to quote the words of Sir Charles Ellis.

> '. . . To supply the necessary quantity of smokeless fuel in one way or another may possibly involve the country in spending more than £200 mill. in building plants that may have a life of forty years. To spend all this money on plant to produce smokeless fuel that is perhaps just good enough, but which no one really likes, would be ruinous. The aim must be to build for the future and to develop new processes that will represent a real technological advance, based on the acquisition of new knowledge . . .'

Availability of Fuels in Great Britain

Already we have noted that the short-fall of coal supplies in Great Britain is not an ephemeral but a lasting phenomenon. The recognition that there is a wide gap between available supplies and existing requirements, and that the gap between future supplies and future requirements will be wider, has led to much discussion and proposals for meeting the serious and difficult situation. As a temporary expedient substantial quantities of coal have been imported from wherever it seemed to be available. The gas industry has had to take a good share of these coals, and not all of them are gasmaking coals. The long-term solution may lie with nuclear energy, but a sound interim answer would appear to demand the importation of largely increased supplies of petroleum. This was forecast in the PEP broadsheet, 'Fuel for Twenty Years,' and stated as Government policy by the Minister of Fuel and Power on July 20, 1955, from which it may be deduced that by 1960 petroleum will be contributing to the total fuel supplies of Great Britain, one-fifth to one-quarter as much as that contributed by coal. This is the basic fuel policy for a generation, it depends upon petroleum, and three questions naturally pose themselves. What is the security of supply? What is the trend of price levels? And what part in this should the gas industry play?

The first question on availabilty is best answered by reference to the proven reserves of crude oil in those fields which are now being worked. Ultimate reserves are unknown, but prospecting proceeds and has proceeded for many years at a rate sufficient to ensure that the oil industry can see its reserves definitely for between 20 and 25 years ahead.

Therefore, the risk that the requisite quantity of oil will not be availabel for the 20-year programme is a small one in times of peace.

The second question is sharpened by the knowledge of Great

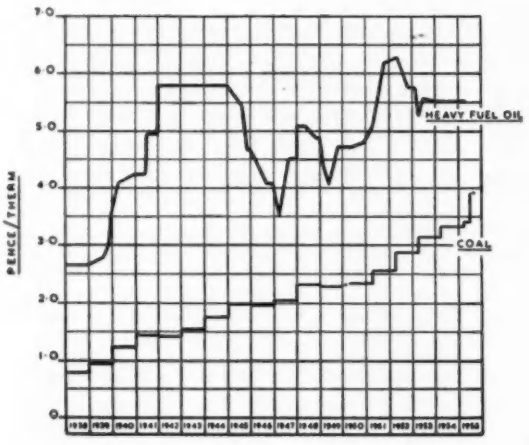

Fig. 1. *Variation in price (pence/therm) of heavy fuel oil and coal.* 1938-1955.

Britain's need for oil and the recognition that one man's need may be another man's opportunity. The best answer to the question is to be found in the history of price changes over the comparatively recent past. In Fig. 1 is plotted the movements of the price per therm of 950 secs. heavy fuel oil (viscosity—2.38 stokes at 37.8°C.) and gas coal in the Thames over the period 1938 to 1955, which has been a period of stress, not calm, and includes a major war and a heavy devaluation of the pound sterling. The price per therm of gas coal has increased in the ratio of 5:1, heavy fuel oil has increased in the ratio of less than 2:1. The margin in price between coal and oil has narrowed greatly and, in certain favourable circumstances, has disappeared.

The gas industry will seek to answer the third question in two senses—first, the part that oil can play in maintaining the gas industry's traditional business largely from existing works, and second, the extent to which the industry's function of rendering acceptable for all purposes raw materials which are not in themselves acceptable, should develop to make the best use of petroleum entering the country.

Oil to Replace Coke

In the first sense it seems that oil may well take the place of coke as the raw material for the manufacture of seasonal gas. If coke is to continue as a product of the gas industry it will have to sell at a price commensurate with its cost of production—otherwise coal gasification will take the place of coal carbonisation. In such circumstances coke will be too expensive a raw material to be used in gas manufacture. Moreover, if coke is manufactured so that it may be used in the domestic market, it would clearly create a storage and handling problem if the coke intended for the domestic market were diverted to gas manufacture at the time when it was most needed for the former purpose. Hitherto, oil has contributed not more than half the thermal value of the seasonal carburetted water gas, and in these circumstances it has been convenient and not too costly to use the higher priced gas oil. The middle distillates of petroleum, which include gas oil, have a very good market for transport, for use in stationary diesel engines, and as fuel oil in the smaller installations. If the gas industry is to use a higher proportion of petroleum products in the future, it will be well advised to look to those materials which sell in a less highly priced market. For this reason water gas plants are now being modified or designed to use residual oils rather than distillates.

On the second issue, which is concerned with the proposed large extension in the overall use of oil, note must be taken of the fact that the additional imports of oil will be in the form of crude oil, though little, if any, will be used in this form. The PEP document, 'Fuel for Twenty Years,' recognises the existence of a real problem for the petroleum refiner in keeping in balance the proportions of his several products. To some extent he can control the relative proportions of light, middle and heavy products, and there are numerous possibilities for the development of extended use of conversion processes. But it is necessary to remember that the conversion processes as a rule are profitable when they are employed to yield a high priced product. The import and use of petroleum on the scale contemplated requires that much of the petroleum must be sold at relatively low prices, for it is intended to replace coal on a thermal basis and is not to be sold as a specialised fuel. This means that the problem of maintaining a balance at the refinery will become exaggerated, and the gas industry can play a most useful part by accepting from the refinery those products which, through its distribution system, can be made of more universal application. Reference has been made already to the traditional use of petroleum products as 'specialised fuels,' and with these in the form of motor spirit, kerosene, and diesel oil, all are familiar. The value of petroleum products for these purposes is considerably in excess of any figure assessed on thermal content. When it comes to using petroleum products solely for their thermal value in replacement of coal their specialised properties are of less importance, although even here a direct comparison of therm per therm, or still less of ton per ton, with coal does not truly reflect the value of petroleum. One ton of petroleum has a thermal value approximately 1.5 times the thermal value of one ton of coal. In many industrial processes the effectiveness in use results in such increased efficiency as will give coal oil parities ranging from 2.0-4.0. Hitherto, the use of oil for gas manufacture has been considered to represent a coal oil parity of as low as 1.7, that is, little better than the direct thermal equivalent. But in the newer oil gasification processes which have been developed to meet the new situation a ton of oil will yield 300 therms of gas (7,440 tonne cal./tonne). This represents the amount of gas which can be obtained by the carbonisation of four tons of coal, and the gasworks will reduce its demand for coal by four tons for each ton of oil which it gasifies. If credit be given for the coke resulting from the carbonisation, the gas yield per ton of net coal consumed is 150 therms (3,720 tonne cal./tonne), so that even on this basis a ton of oil will replace two tons of coal.

MEASURING WORK IN THE OFFICE

A REPORT surveying means of measuring office work and outlining their scope and usefulness has been issued in the form of a booklet published by the British Institute of Management. The booklet, entitled 'The Measuring of Work in the Office,' is one of two publications appearing simultaneously to inaugurate a new B.I.M. series to be devoted to office management. It has been produced under the guidance of a steering committee set up by the Institute jointly with the Office Management Association and the Institute of Cost and Works Accountants.

The measurement of work has undoubtedly proved its value in the factory and, in these days of rising administrative costs, the advantages of any techniques designed to improve the efficiency of the office cannot be ignored. In recent years an increasing number of articles in journals have testified to a growing interest in the subject. 'The Measuring of Work in the Office' sets out to present an up-to-date summary in a form that will prove of real value to management.

Sections of the booklet are devoted to methods of measurement by simple timing, averaging and activity sampling with a note on mechanical aids to measurement. A chapter on more formal techniques discusses measurement by time study and by synthesis from elemental data. An appendix presents a mathematical formula for the application of activity sampling and a bibliography lists some forty books and magazine articles on the measuring of work and on related subjects.

'The Measuring of Work in the Office' is published simultaneously with 'Invoicing Methods,' the first comprehensive guide to methods of invoicing ever to be published in this country.

'Invoicing Methods' aims to serve both as a standard work of reference for the specialist and student and as a guide to the general manager. The book outlines in practical form all current methods of invoicing procedure ranging from the simplest manual to those involving the use of an electronic computer. It is based on a framework of case studies drawn from all sizes of undertakings and supplied by firms well-known in both the manufacturing and distributive fields.

Marketing Gas Coke*

By R. A. W. HOLLINGDALE,
DEPUTY COKE OFFICER, NORTH WESTERN GAS BOARD

In 1944 coke programming was introduced by the Government for the purpose of ensuring that the coke available was supplied to the highest priority consumer. District coke representatives were appointed by the Ministry of Fuel and Power and it was their responsibility to prepare programmes within their area on a 12-monthly basis and to allocate coke based on availability and requirements.

Three separate programmes were prepared, one for industrial consumers another for non-industrial consumers, and a third for block allocations to merchants. Industrial consumers consisted of premises in which goods, commodities or articles were grown, produced or manufactured, non-industrial included all residential premises such as hotels, boarding schools, hospitals and offices, *etc.*, while block allocations were made to cover supplies into the domestic market.

Individual gas undertakings had given an assurance to the Ministry of Fuel and Power that their works prices would not be varied without the Minister's approval. For orders of five tons and under, the Ministry of Fuel and Power published local fuel overseers' schedules of maximum retail delivered prices in accordance with the Retail Prices Order of 1941 while the Wholesale Prices Order of 1941 controlled the delivered prices for orders of over five tons.

And so the programming of supplies had virtually taken the place of selling, as the quantities allowed and the source of supply were decided upon by the district coke representative. The only commercial arrangement necessary was to indicate the price which would be charged and the destination for delivery. Though each gas undertaking marketed its own coke either direct to consumers or through the distributive trade, co-ordination was carried out by the Lancashire and District Coke Association. This was an association of gas undertakings in Lancashire, Cheshire and North Wales, formed in 1939, to 'promote the use of gas coke as a fuel for domestic and industrial heating,' and to 'co-ordinate and regulate the price of coke within the Area of the Association.'

Similar coke associations had been set up in other parts of the Country and were co-ordinated under the National Federation of Gas Coke Associations.

Coke Sales Organisation

On nationalisation the North Western Gas Board set up a coke sales organisation at headquarters with a coke officer and staff for the control and co-ordination of the coke sales within the Board's area and to co-operate with other Boards. Coke programming remained in operation until April, 1954, when the derestriction of coke supplies made possible a modified form of programming which operated for one year so that the change from restriction to normal commercial practice could take place without inconvenience to consumer or producer.

Up to April, 1955, therefore, the coke officer continued to act in the capacity of district coke representative and allocated coke to consumers based on their requirements and the fuel's availability.

A group coke sales representative was appointed to each group, and he is responsible for the disposal of all coke produced within his area. He and his staff form a group organisation to ensure that the right type of coke is made available to the consumer and, where necessary, arrange the transfer of coke from one part of his area to another. By the Board's integration policy, certain works have been closed down, and this has caused coke supplies in that particular area to be insufficient to meet normal demand. Elsewhere, works have been enlarged, and additional quantities of coke have been produced. It is the duty of the group coke sales representative to arrange, through the headquarters' coke department, the transfer of supplies to the shortage area so that it will be in a position to meet its commitments.

The coke representative is responsible for the coke from the time it leaves the retort house until it is delivered to the consumer or the consumers' premises, and he is therefore responsible for all charges raised against coke. To ensure the most economical working, very close liaison is maintained with production engineers, station personnel, accounts and transport departments. At the same time he must keep in touch with his consumers and merchants and help to settle any difficulties they may experience.

To co-ordinate effectively sales within the area, the coke officer holds regular meetings with the group coke sales representatives which a Board member attends, and where necessary representative(s) from the production or other departments of the Board. In this way the representatives are kept informed of the future policy in coke marketing.

The latest figures are not yet available but examination of the figure for the 12 months ended March 31, 1955, shows that the North Western Gas Board produced 1,844,865 tons of coke. After allowing for the quantities used for C.W.G. manufacture and other works purposes 1,587,078 tons were available for sale. An opening stock of 203,802 tons gave a total quantity available for sale of 1,790,881 tons.

Of the total sales of 1,727,081 tons, 156,390 tons were exported abroad, 5,000 tons were sent into other Board's areas, and sales into the inland market amounted to 1,566,000 tons. Of this quantity 57% was sold direct to consumers, and 43% was sold through distributors.

Improvement in Domestic Sales

Domestic sales, since 1952-53, have shown a gradual improvement, and during 1954-55 amounted to 26.6% of the Board's direct inland sales. This may be due to the shortage of other fuels, but experience often shows that if a domestic consumer has tried coke and is satisfied, repeat orders can be anticipated. The future market lies in this direction, and the gas industry which is in daily contact with the general public, will be more than equal to the task of demonstrating to the housewife the correct and efficient use of coke.

During 1954-55 the non-industrial consumer purchased from the Board 33% of the Board's direct inland sales. Their supplies are used during the winter months, and as their stocking facilities are somewhat limited, their summer purchases only amount to 30% of their requirements, and this causes the Board's stocks to rise during the summer months.

Industrial sales in 1954-55 amounted to 40.4% of the Board's direct inland sales. Unlike coke taken solely for space heating, industrial consumers require supplies all the year round and are therefore a most valuable market.

Although the supply of coke to the inland market is now unrestricted, a rigid control is still maintained by the Ministry of Fuel and Power on the quantity that may be exported by the gas industry. Each year the North Western Gas Board ship from the Mersey large quantities to Norway and Denmark, and considerable supplies are sent forward to Finland, Eire and Northern Ireland. In 1954-55 the Board exported 156,400 tons. Importers are asking specifically for North Western coke, but the restricted amount does not permit us to satisfy all demands. The demand which is now being experienced for the Board's coke is the result of the Board's policy to spend some £3 mill. during its first five years of existence on the construction and replacement of screening, grading, storage and bagging plant. During 1955-56 the quantity of coke which the gas industry was permitted to export was considerably below the previous year. This was particularly unfortunate for, owing to the severity of the previous winter, stocks in Norway and Denmark were low and coke was urgently required. Fuel oil is a serious competitor in the Scandinavian countries, and is likely to become more so if continual cuts are going to be made in the quantity of coke which can be exported. At best, im-

* From a paper presented to the Manchester and District Junior Association of Gas Engineers on May 12, 1956.

porters will be forced to take fuel from other exporting countries, and unless supplies are forthcoming these markets will be lost to us.

Sales through merchants is one of the major problems with which the Board has to contend. Many consumers still consider coke to be a secondary fuel, and only purchase supplies when other solid fuels are not available. This applies to merchants as well, who only handle coke when forced to do so during a shortage of other fuels, or because his customer insists on its use. Coal is still rationed but merchants are allocated tonnages during the summer as well as the winter months, and can build up a stock at his depot from which he can draw during the winter. If coal is available in good supply, the merchant's stocking facilities are fully taken up to the exclusion of coke.

With the introduction of the new coke marketing scheme, the merchants' participation in the selling of the Board's output should steadily increase so that many merchants who are already aware of the part coke is going to play in the formation of smoke control areas are adjusting their organisations.

In 1954-55 distributors purchased 679,600 tons or 43.3% of the Board's inland sales, as well as approximately half a million tons of hard coke which is sold annually in this area. The Board is fully aware that the distributive trade is essential to the economical disposal of its coke, and as the 2,000 merchants throughout the whole of the Board's area maintain widespread depots they could collectively stock during the summer months a good proportion of the winter coke requirements. In addition the consumer would be given better service and would receive this coke more promptly.

The Lancashire and District Coke Distributors' Association, formed prior to 1939, was allowed to lapse during the war but was re-formed in November, 1952, and now represents some 90% of the merchants in the area. Close contact can be maintained between their Secretary and the Board's coke officer to discuss and settle any points raised by the merchants.

On nationalisation each of the 103 separate gas undertakings in the area, had its own schedule of prices which had been built up by taking the pre-war price plus increases authorised by the Ministry of Fuel and Power.

Marketing Scheme

It was therefore decided that a coke marketing scheme should be prepared to cover the sale of coke at works which would embody uniform prices and satisfactory remuneration to those distributors who would conform to stricter conditions of supply. With the co-operation of the distributors a scheme was prepared and submitted to the Ministry of Fuel and Power in 1954 for approval. Approval was received from the Ministry at the end of May, and the new scheme came into operation on June 13, 1955. Its objects were, to create a suitable market for the sale of gas coke, to ensure that everyone purchasing coke under like conditions may do so under the same maximum price schedules applicable within each zone, to give an improved fuel service to the customer, and to standardise to merchants and the Board maximum margins on the sale of coke.

The Board's area has been divided into three separate zones, and within each zone there is a standard scale of works prices which apply irrespective of the size of the coke purchased. To improve the standard of service to the consumer, the Board appointed two classes of merchants who have accepted certain obligations, and are prepared to take not less than 50 tons of coke per annum. These obligations consist of specified services which he is prepared to give to his consumer, and dependent upon his appointment, the merchant receives from the Board a certain allowance off the contract works price.

The scheme has been in operation for some 11 months, and it has been a marked success. It is encouraging to think that for the year 1954-55 the gross revenue obtained from coke amounted to £8,782,149 or 24.5% of the total gross revenue of the Board.

Since nationalisation great efforts have been made in the North West to produce a first class, well screened coke, and over the last five years considerable advances have been made. As the quality depends to some extent on the quality of coals supplied a very careful watch is kept on all deliveries and the National Coal Board have been asked to co-operate.

Formerly coke of many different sizes has been produced, which has compelled the Board to adopt the following sizes: No. 1, over 2 in., large; No. 2, 1¼ in. by 2 in., domestic nuts; No. 3, ¾ in. by 1¼ in., small domestic nuts; No. 4, ⅜ in by ¾ in., industrial boiler fuel (I.B.F.); ⅜ in. to 0, breeze.

Existing screening and hopper arrangements, however, have not made it possible to introduce these sizes at all works, but when new plant is ordered or modifications take place, the screens to be installed will conform to the above sizes.

The Board is able to provide a full technical service to assist and advise all types of consumers on any of their coke problems. Though many of these problems can be dealt with at Group level, it is hoped that a coke technical assistant based on headquarters will be appointed, who will be available to give any additional technical advice needed by the group coke sales representatives.

To promote the efficient use of coke in the domestic market a section of Watson House is set aside for the purpose of rigorously testing any domestic appliances. No appliance is sold by any of the 12 boards unless it has received prior approval.

The Board too has set up a central laboratory at Salford to help Watson House and other boards in the testing of appliances, but also to assist in the Coke Quality Survey, by carrying out large numbers of critical air blast and the fire tests on coke produced by a number of our works.

The Board has also set up a coke technical committee which consists of both the production and sales side, to assume responsibility for and to make recommendation to the coke officer for submission to the Board on technical matters relating to the quality, sale, and utilisation of coke.

Publicity

Before nationalisation there was very little publicity and although the board's policy has been to issue material of more educational value the object of publicity must be to remove prejudice from the minds of the public. There are two distinct methods of achieving this, by visual advertising and by service to the consumer.

In spite of good publicity, it is useless if adverse criticism is made through the Press or otherwise about our product. If we supply coke which is completely satisfactory to the consumer, then that is the best advertisement we can expect.

In certain parts of the Board's area house-to-house canvassing is carried out and demonstrations are given on the correct manner to light and maintain a coke fire. This may seem an expensive method of publicity, but experience shows that a consumer who knows how to use coke on her grate is not only satisfied, but also tells her neighbour, who in turn becomes another coke user.

Education

To assist the personnel employed in coke marketing, it is essential that they are acquainted with up to date information regarding coke utilisation. Courses of instruction are arranged at Watson House and many of the Board's personnel have attended. Classes on solid fuel production, distribution, and utilisation are also held at technical colleges situated in the Board's area. Lectures also, are given on all aspects of coke production, utilisation and marketing, and on these occasions invitations are sent out by the Board to local merchants and those consumers whom the Board consider would find the particular lecture of interest.

DISCUSSION

Mr. H. Kershaw (Central Lancashire Group) said that the coke sales officers did all they could to ensure that the best quality coke was put on the market, but it was the job of 'production' to ensure that the right type of coke was available for them to do this. He added that in his own group he was not responsible for coke ex retort house, only ex works.

Mr. Hollingdale, in reply, said that in the Board's instructions the Coke Officer was responsible for all charges raised on coke from the time it left the retort house. He said he had emphasised in the paper that there must be close liaison maintained between the officers in the groups.

Mr. V. E. Chancellor (Board Headquarters, Manchester) said that all members of the Association concerned with the production side appreciated that a large section of the layman

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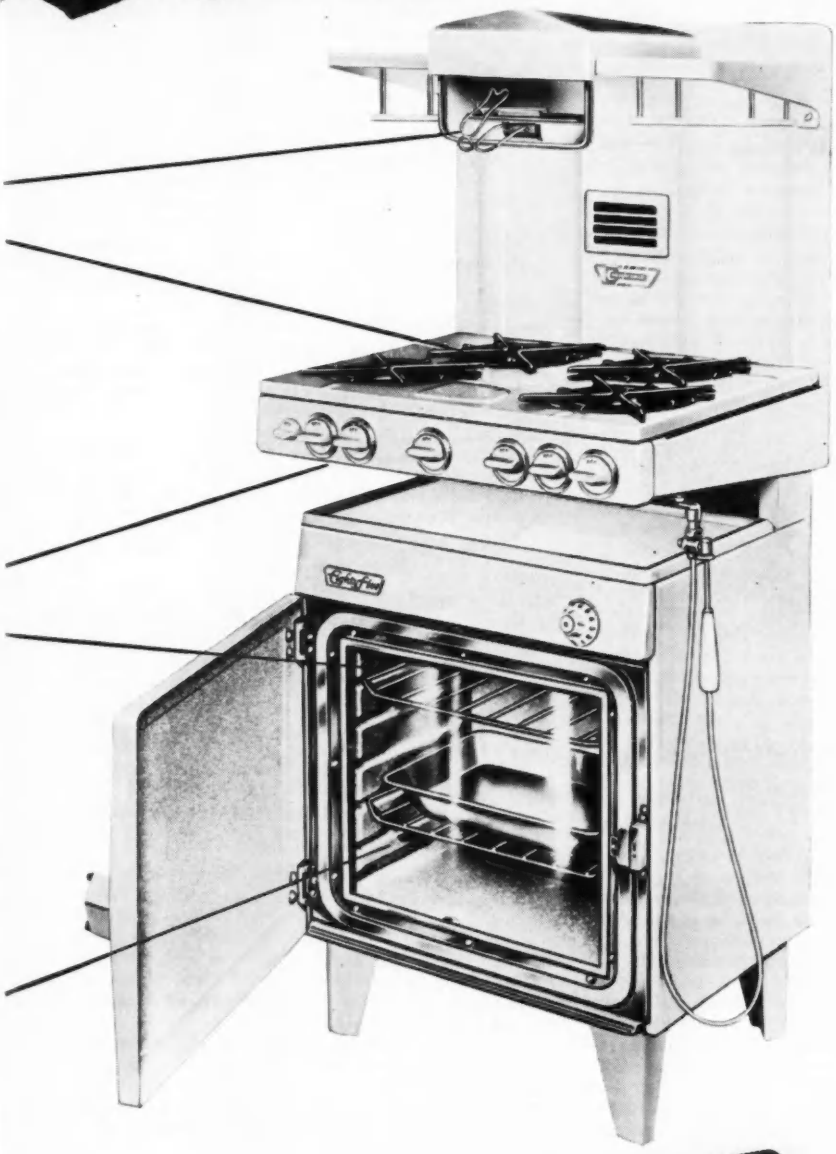

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public still regarded coke as 'cinders' and not as a processed fuel and, all would agree, the best long-term publicity was to provide a satisfactory fuel at all times. It was extremely interesting to learn that a large number of overseas buyers were asking for North West coke, but there must be no feeling of complacency over this achievement since a reputation was much easier lost than gained. Referring to house to house canvassing and associated demonstrations, Mr. Chancellor said that so far from this being regarded as an expensive form of publicity, the engineering side of the industry looked upon it as a very desirable service to the consumer. If the necessary 'know how' on operating the appliances efficiently was imparted to the consumers, many of the so-called complaints concerning coke would disappear.

Referring to the domestic coke quality survey being carried out at 26 works of the North Western area, he pointed out that other area boards were carrying out similar surveys, the purpose being to ascertain the quality of coke boards were supplying, the variability of quality of existing production, and what quality of high grade reactive domestic coke could be supplied in the future.

Contribution to Revenue

Mr. Chancellor asked if the contribution which coke was making and had made to the Board's revenue account during the five years 1950/51 to 1954/55, referred to coke alone and not coke and breeze. **Mr. Hollingdale** replied that the figures he had quoted had been taken from the Board's report over the five years and related to actual coal gas production, not the total revenue from coke and breeze. On the quality survey he had mentioned earlier that there would be standards. In the Beaver Report it was stated that a British Standard should be obtained for coke quality and in anticipation of that the Board were making a very wide survey. An interim report had been presented, which would be of help in deciding the quality which we could produce. The standard of coke which would be required under the Clean Air Bill was not known, but in conjunction with other boards the North Western was obtaining the necessary information so that they could use their influence to have a standard to which they could conform.

Mr. J. Waterhouse (Coke Officer, Liverpool Group) said that nothing would please the production and sales side more than to double the sales of coke during the summer months and thus relieve unnecessary stocking. The Board would save a tremendous amount of money if the price of coke could be related to some type of group code, say group 4, so that at the end of the winter period the coke price would be reduced by so much, similar to the system for coal, as an inducement to the consumer to take it into his yard and stock it, instead of the Board having to pay transfer costs from stocking grounds.

Summer Stocking

Mr. Hollingdale replied that the question of summer stocking allowance to induce the consumer to stock, similar to that of house coal, was being almost yearly considered at the various national committees, but the experience of this Board was that on two or three occasions when allowances for stocking had been announced, to try and increase the sales, there had been no response whatsoever. The Board therefore was very chary about introducing any such summer stocking allowances. At the present time prices for domestic coke were related to the basic price for coal group 3, by which the basic price varied about 6d. per cwt. between the summer and the winter prices, a basic 3d. per cwt. higher. The prices in most areas relating to group 3 were higher than the existing coal price in the summer and in the winter slightly lower, so that if the price was reduced in the summer and put up during the winter, it would be nearer group 2 coal price, although a standard group 3 price.

Mr. S. Moss (Coke Officer, North Cheshire Group), referring to what Mr. Waterhouse had said, asked whether this was not confined to the stocking allowance, which he could not recall being afforded to the consumer. He had been approached by industrial concerns who would stock during the summer if they had an incentive to do so. Such consumers would welcome a stocking allowance of so much for so much tonnage stocked.

Mr. Hollingdale replied that the price variation applied to consumers as well as merchants. Stocking was a very tricky problem and so was the question of price; often area boards were given instructions from the Ministry of Fuel and Power. Last year the hard coke people had put in a stocking allowance and they had done so again this year, but last year the gas industry had been instructed by the Ministry to hold a minimum stock of 1½ mill. tons on their works. This Board's proportion was 200,000 tons. It was most confusing and very difficult to decide what was best to do, as orders from the Ministry would nullify any efforts at summer stocking. The Board were therefore hesitant about paying stocking allowances. At the last Coke Committee meeting in London, when this was discussed, some Boards had been in favour of it and perhaps next summer one Board might try out a pilot scheme.

Mr. N. Parson (Coke Officer, Mid-Cheshire Group), referring to publicity, said that for a considerable time very little advertising had been carried out, and that more should be done in the future. He agreed that people had been trying to burn coke without any knowledge of how to do it, and it could be readily understood that they preferred coal. He suggested that if the combustion of solid fuel was explained more simply to people without any technical knowledge, it would produce better results. He had been to houses to sell coke and found that the secret of success was instructing the consumer how to burn the fuel by freeing the accumulation of ashes and remembering that the bars must be kept clean. He felt that publicity would benefit the Board.

Mr. Hollingdale said it was true that the gas industry had had to fall back on publicity, but the publicity department at headquarters was preparing a pamphlet on the correct way to light a fire, maintain it, and so on. This was practically ready for distribution. A suggestion had also been made that a small film should be produced demonstrating the correct way to light and maintain a coke fire, and this film could be shown very easily by the industry at the service centres when they held their demonstrations. Instruction of this kind was vital to the future of coke in the domestic market.

Interest in Coke Quality

Mr. W. S. Hubbard (Group Production Engineer, Liverpool) said that he was particularly glad to see the Coke Officers were taking so much interest in coke quality. While the Coke Officers in their everyday duties were primarily concerned with supply to the consumer of a good standard product, the engineer was particularly concerned with the production of that product. The production engineer could not maintain at all times a completely reliable coke product for the simple reason that many factors entered into the operations, over which he had no control. He referred to the ash variation in coal, and the fact that unless marshalling facilities were available at a works, the coals were carbonised just as received and usually no blending took place.

Although the idea of a merchant stocking coke in the summer had a lot to commend it, it created a danger from the consumer services point of view. If a screened coke deteriorated during the summer months the merchant would blame the coke as delivered from the gas undertaking. For a long time the principle at Liverpool had been that all coke taken from stock was re-screened in order to ensure the best product being delivered to the consumer.

The actual cost of handling coke was regarded as starting ex retort house, and all the plant and machinery came under the production personnel, while the Coke Officer was actively concerned with the consumer the moment the coke was delivered into transport at the works. The production personnel must be actively interested in the cost of handling, and must realise that degradation can be a very costly thing. The coke officers, on the other hand, had to make sure that the highest price per ton was realised and so they were involved in a study of transport problems and the solid fuel peak load demand.

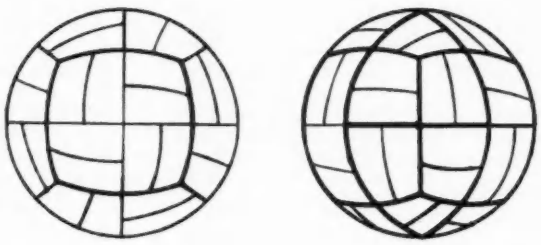
Mr. Hollingdale replied that in many groups in the area coke was charged from the time it left the retort house until it was delivered, and this charge was against the coke department. When summarised these charges were inspected by the chairman at meetings and criticised. The Coke Officer could not be entirely responsible for everything on his own from the particular point where he took over as that could only be done with complete liaison with the production department.

GAS ON THE CONTINENT

ABSTRACTS FROM RECENT PUBLICATIONS

Welded Spherical Gasholders

During the last three years, 38 welded spherical gasholders have been erected in Western Germany varying in capacity from 85,000 to 3,850,000 cu.ft. of free gas and suitable for pressures from 80 to 170 lb. per sq. in. In the past, disappointing results with welded constructions, particularly with welded bridges, had held up progress and it was only the discovery of a suitable constructional steel that made this development possible at all. This steel combines a fine-grained structure with excellent transformation properties even when cooled rapidly and with an absence of brittleness. A typical analysis is as follows: 0.20% C, 0.45% Si, 1.05% Mn plus an unspecified addition of Al, min. yield strength 48,000 lb. per sq. in., elongation 20 to 24%. Hydrogen-controlled electrodes with a very low H_2, N_2 and O_2 content and with remarkable toughness at low temperatures gave the best results. A safety factor of 1.8 is used in the calculations for the butt-welded spheres which allows for some intercrystalline corrosion due to cyanide action.



The illustration shows how the spherical surface area is subdivided into repeatable sections which can be accurately cut to a template and welded together on site. The spheres rest either on three equidistant tiltable roller bearings, or on a series of V-struts attached to an equatorial pressure ring. Suitable cranes must be available on site. All welds are subject to tests as work proceeds: The present regulations prescribe X-ray tests for 5% of the welded joints of every welder, but the proposed revision will demand 100% X-ray testing. Ultrasonic examination of all welds on site is also strongly recommended. The spheres are pressure tested at 1½ times the working pressure. Before approval for the erection of such a gasholder is given, a long procedure is necessary and all public authorities, inspectorates, planning departments, road and rail transport interests, etc., are consulted. It is claimed that a spherical high-pressure gasholder weighs only 50% compared with an orthodox low-pressure gasholder, that it is cheaper to construct, requires cheaper foundations and needs much less maintenance.

H. A. Neuman: *Gaswärme*, Vol. 5, No. 3, March, 1956, p. 53.

New Oil-Gas Plant at Stuttgart

The oil-gas plant at the Gaisburg Works of the Stuttgart municipal Undertakings, which was inaugurated in February, 1956, greatly increases the productive capacity of the gasworks at low capital cost and in a small space. It is based on the gasification of crude oil and has an initial production of 2.1 mill cu.ft. of 765 B.Th.U. gas a day. By mixture with the available water gas, a supplementary 6 mill. cu.ft. of 470 B.Th.U. gas is obtained per day. The plant consists of an oil carburettor, a cracking chamber, a regenerator and a waste-heat boiler. A blower of the same size as used for the carburetted water gas plant provides the blast for the blow process. The cycle of blow and make periods is fully automatic and all valves are hydraulically operated. Provision is made for the addition of a catalyst stage in the oil carburettor instead of the present refractory chequer bricks to allow the production of a low B.Th.U. gas should less water gas become available. Another possibility which may be given preference in the near future is the production of 670 B.Th.U. oil gas by a purely thermal cracking process.

Das Gas—Und Wasserfach. Vol. 97. No. 7. April 1, 1956, p. 287.

Phenol Recovery from Ammonia Liquor

The Municipal Irrigation Scheme of Berlin which accepted effluents with appreciable phenol content will probably be replaced by a bioligical treatment of the sewage. The liquor from the new extensions of the Mariendorf gasworks was therefore not only to be kept to a minimum but its phenol content had to be as low as possible. The former consideration spoke in favour of the semi-direct process for the ammonium sulphate recovery, and the second necessitated the erection of a phenol recovery plant. It was decided to work to the Emschergenossenschaft process, in which benzole is the flushing agent.

The phenol scrubber is a 60 ft. tower of 6 ft. diameter. An absorption benzole with 0.87 to 0.90 specific gravity and with a boiling point of 140°C. is used as wash benzole. A liquor to benzole ratio of 1 to 1.1 has proved best. Cylindrical tanks of 12 ft. height and 7 ft. diameter, filled with three and a half to four tons of 20% caustic soda serve as alkali scrubbers for the phenolised benzole. At a liquor flow of 105,600 gallons in 24 hours, the phenol content in the crude liquor of 150 to 170 grains per gal. was reduced to 0.005 to 0.008 grain per gal. The acceptance tests proved a mean scrubbing efficiency of 95.8% and a benzole wastage of 0.0025 lb. per gal. Taking the average throughout 1955, every lb. of phenolised caustic soda contained 0.136 lb. of phenol and 0.081 lb. of creosote. Although the plant is not yet working to full capacity, the sales of phenolised caustic soda have covered all expenditure on wages, materials, power, maintenance, depreciation and interest on the capital. It may well show even a profit later. The plant has worked satisfactorily since January, 1955, including the extremely cold spell in February, 1956.

J. Kärrner. *Das Gas Und Wasserfach*, Vol. 97, No. 9, May 1, 1956, p. 374.

Classification of Gaseous Fuels

The German Standardisation Committee for gaseous fuels has just circulated for discussion three proposals for the classification of gaseous fuels. All three proposals are based on the percentage of hydrogen in the gas, in addition to its calorific value and specific density, because ignition velocity is affected by the H_2-content. Tests have shown, however, that grid gas/nitrogen mixtures with an ignition velocity which increases as the hydrogen percentage goes up do not exhibit much difference, if any, as far as the flame in a burner is concerned.

Further tests with mixtures of hydrogen, carbon monoxide and methane, possessing the same calorific value but varying hydrogen content have proved that the product of the ignition velocity and the root of the density remains constant at constant calorific values and does not vary with the hydrogen content. A rising hydrogen content affected neither the ignition velocity nor the Ott index for flame flicker nor the Reinecke rapid gas tester reading, as long as calorific value, density and percentage of inert gases remained constant. It is therefore suggested that a separate statement of the percentage of hydrogen in the gas is superfluous and that the percentage of inert gases which decisively affects the ignition velocity would be of greater interest. For the purpose of classification, the combustible matter would be covered by the calorific value, the inert matter by its percentage, and both by the density. A classification based on this new proposal would facilitate the calculation of the Wobbe index and of an index characterising the burning properties of a gas. The flame of a gas containing a higher percentage of inert gases at the same calorific value and density would show a distinctly higher tendency to become

detached from the burner, whilst a tendency to popping-back would be the more pronounced the lower the calorific value, the higher the density and the lower the percentage of inert matter.

F. Gebert. *Gas-Wärme.* Vol. 5, No. 5, May, 1956, p. 195.

New Coal Handling Plant for Berlin Gasworks

The old coal handling plant at the Mariendorf section of the Berlin Gasworks Company has a capacity of 800 tons per shift and required a labour force of between 20 and 36 men in each of the three shifts. It was hardly adequate even for the existing plant and extensions to the carbonisation capacity required a modern, high-capacity handling plant within the same space. The new plant was designed to handle 9,000 tons of coal in two shifts with a minimum of labour. The illustration shows it in plan view. Coal delivered in 60-ton saddle-back railway wagons is discharged into an underground hopper of 1,200 tons capacity. Two travelling feeder carriages pass the coal to the belt conveyors I and II and to the inclined belt conveyor III, all of 55 in. width, followed by a crusher and the belt conveyor IV. Coal from open goods wagons is discharged by tipplers at either end of the hopper and fed into the same system. Water-borne coal is discharged by two luffing-jib cranes of 120 tons per hour capacity each and with 48 ft. outreach. Their portal structure includes a crusher and reversible belt conveyors so that oxide or coke can be transported in the reverse direction and loaded into barges. Water-borne coal joins the rail-borne coal from transfer tower A at belt conveyors 1 and 2. All coal passes to transfer tower B and the following network of conveyors carry it either to the stock pile or to the crushing and blending plant. Stocking conveyors can store 190,000 tons of coal at the stockpile to a height of 20 ft. Three portal type grab cranes can take the coal from the piles. The new plant is capable of handling in two shifts the following: 3,000 tons of rail-borne coal and 3,000 tons of water-borne coal to the stockpile, also 3,000 tons to the crushing and blending plant, all with a labour force of only 22 men per shift. A mimic panel allows the man in charge to supervise and control the function of the whole plant with the exception of a few manually controlled units like railway wagon tipplers, travelling feeder carriages and stocking conveyors. It is hoped to complete the whole plant, only phase 1 of which has been completed so far, by December, 1957. A de-freezing equipment for the saddle-back wagons will be installed in the near future.

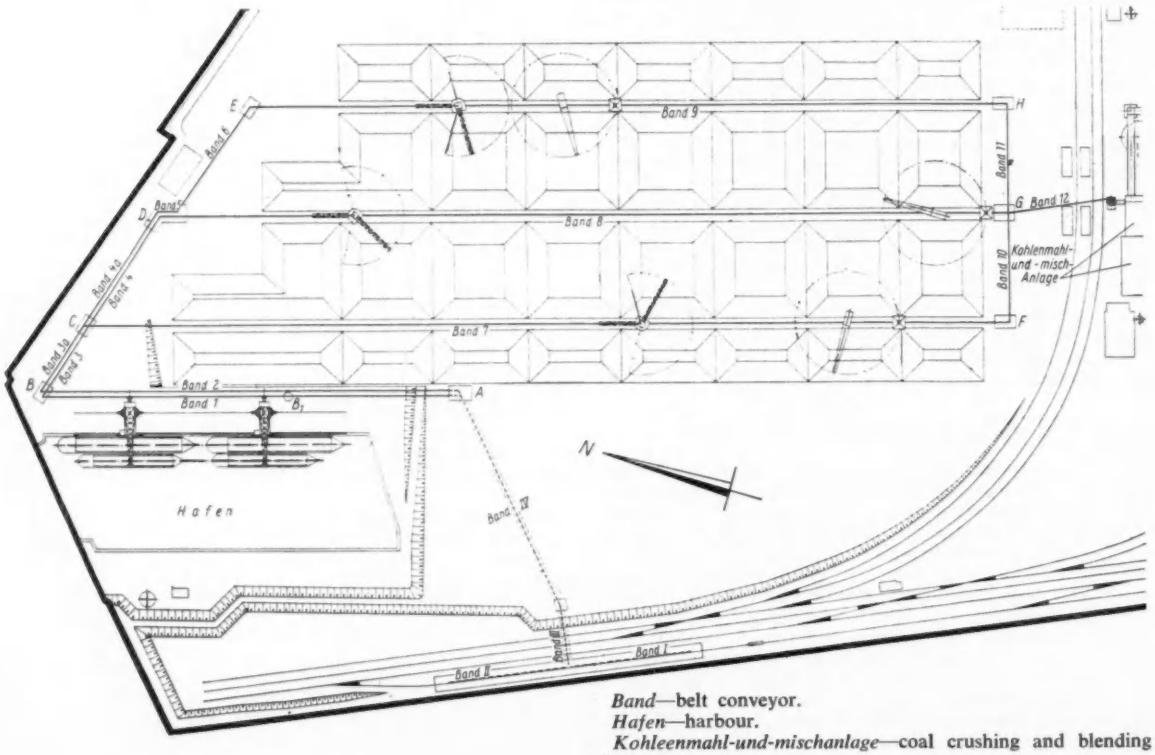
H. Wurbs. *Das Gas Und Wasserfach,* Vol. 97, No. 9, May 1, 1956, p. 363.

Distribution of Natural Gas in Northern Italy

96% of the Italian methane production is in the hands of the 'Ente Nazionale Idrocarbure' concern (ENI). In the year ending April 30, 1955, 96,000 mill. cu.ft. of CH_4 were produced, a rise of 35% on the year 1953/54. E.N.I. is a holding company with a number of subsidiaries responsible for the following four main groups of activity: (a) Prospecting and production, (b) supply, distribution and sale of methane, (c) distribution and sale of mineral oil products, and (d) petrochemical and chemical group. Most of the E.N.I. production comes from the areas of Milan/Piacenza and of Padua/Bologna, with Cortemaggiore and Caviaga S.E. of Milan as the chief centres.

A network of pipe lines extends over the whole of Northern Italy from Turin in the West to Venice in the East, to Genoa in the South and to Como in the North. A long distance pipeline to Rome to feed the heavy industry nearby is in the planning stage. The total length of pipe lines laid up to the end of 1953 amounted to approximately 2,000 miles and this had risen to 2,300 miles by the end of 1954. The weighted mean pipe diameter rose from 9.375 in. to 10.155 in. About two-thirds of the total methane production is used for industrial heating processes and about 7% in the chemical industry as a raw material for fertilisers, etc. The use as fuel for motor vehicles which consumed most of the methane in the early days has shrunk to very small proportions and now accounts for only 3.8%.

Schweiz, Verein Von Gas-Und Wasserfachmännern. Vol. 36, No. 5, May, 1956, p. 111.



Band—belt conveyor.
Hafen—harbour.
Kohleenmahl-und-mischanlage—coal crushing and blending plant.

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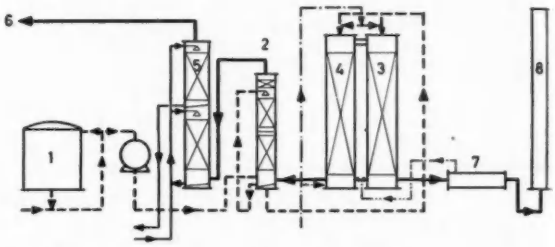
Technical Possibilities of Oil Gasification

The energy requirements of Western Germany have risen by 6% per annum over the last five years, whilst the gas consumption has gone up by over 12% per annum in the same period. As the home coal production rose by only 4% per annum, coal had to be imported at considerable expense. The gas industry has therefore turned more and more to oil gasification processes. Only one gasworks (Hamburg-Grasbrook) still uses oil for the manufacture of carburetted water gas. The admixture of 1 to 5% of heavy fuel oil to the gas coal on the other hand is common practice for meeting peak loads at all gasworks and at many coke oven plants in Western Germany. Mineral oils with a paraffinic or olefinic base were found to be most suitable. Catalytic gasification processes like the Onia-Gegi process have recently been introduced and the first plant using this process was built in Berlin-Mariendorf by D.E.M.A.G. under licence. A smaller plant was erected at Nortorf and a third one is being built in Brazil. The licence for another catalytic proces, the Segas process has been granted to Didier-Kogag-Hinselmann and the first plant for 780,000 cu.ft. per day capacity went into production at Hameln three months ago. A heavy fuel oil of 0.975 specific gravity yields a gas of 470 to 530 B.Th.U. per cu.ft.

A new 'blow-and-run' process has been developed by H. Ibling of Recklinghausen, in which oil is treated with superheated steam in a gasifier. The oil gas passes through a scrubber (see flow diagram) the sump of which serves as a reservoir for the oil. The latter is pumped both to the top of the scrubber, where it is sprayed into the ascending oil gas, and to the top of the gasifier generator. Superheated steam from the heater generator also enters the gasifier and the resulting oil gas of town gas quality is scrubbed, cooled and freed from sulphur. A periodical blast of air heats up heater and gasifier generators by combustion of the carbon deposited during make. If continuous operation is required, another pair of generators may be installed, one for the 'run' period and the other for the 'blow' and steam purging period. The



1. Oil storage tank.
2. Oil scrubber.
3. Heater generator.
4. Gasifier generator.
5. Cooler.
6. Town gas.
7. Waste heat boiler.
8. Stack.

Oil gas = ——————
Oil = - - - - - - - -
Air = — · — · — · —
Water = ——————
Steam = — · · — · · — · ·

first Ibing plant in Heidenheim produces 530,000 cu.ft. per day from heavy fuel oil of Bunker C quality. A second plant for 1.77 mill. cu.ft. per day capacity will soon be ready at Heilbronn. Further plants for 1.6 mill. cu.ft. per day at Trier and for 2.5 mill. cu.ft. per day at The Hague (Holland) are under construction. The Stuttgart gasworks are installing an oil gasification plant of 2.1 mill. cu.ft. per day capacity which works to the I.B.E.G. (Innsbruck) process, consisting of oil vaporiser, cracking chamber, regenerative superheater and waste heat boiler. Another process for the thermal cracking of oil, developed by Koppers of Essen, forms the basis of the extension plant for the Düsseldorf gasworks and will add 1.77 mill. cu.ft. per day to its capacity. This plant has not yet been taken into operation. A number of gasworks have installed peak load plant which utilises liquefied gases like propane and butane either for carburetting air and low B.Th.U. gas or for a catalytic cracking process.

W. Fitz. *Gas-Wärme.* Vol. 5, No. 5, May, 1956, p. 167 and 202.

6

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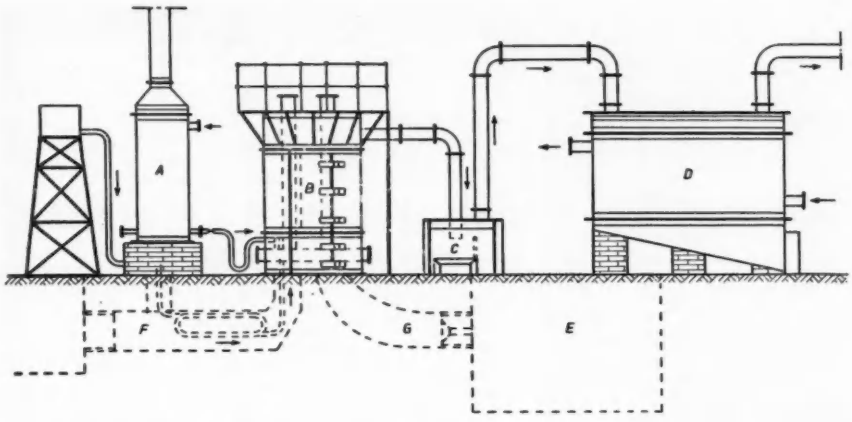


A—oil preheater
B—gasifier
C—seal pot
D—waste-heat boiler
E—fire chamber
F—flue
G—fuel duct

New Oil Gasification Process

A new 'Pyronol' process of gasification from oil has been the subject of a Dutch patent application by Jansen and v.d. Zee. Instead of superheated steam, water and oil are pre-heated together to 100°C. and enter the gasifier as a mixture. The reaction temperature can be set to any figure between 750 and 1,100°C. Oil, oil vapours and oil gas are kept continually on the move within the closed retort system and pass through the reaction zone in counterflow to the fuel gas. The temperature rises no more than 1 to 2°C. for every 8 in. of travel, and the presence of steam prevents both carbon deposits and the decomposition of hydrocarbons of high calorific value. The simultaneous heating of steam to the same temperature as the oil is claimed to result in favourable reaction conditions so that the formation of tar can be eliminated altogether. The process can use all grades of mineral oil or heavy residual oils, tar and waste fat, and the optimum conditions for gasification can be set for a wide range of feed. The oil gas obtained may be used for industrial or domestic purposes by itself or it may be blended with town gas. The capacity of the gasifiers ranges from 100 to 2.240 lb. per hour. Space requirements are considerably less than for a gasworks on coal basis, and little labour is required. An experimental plant indicates that the yield may be approx. 80% and may reach even 90% under suitable feed conditions.

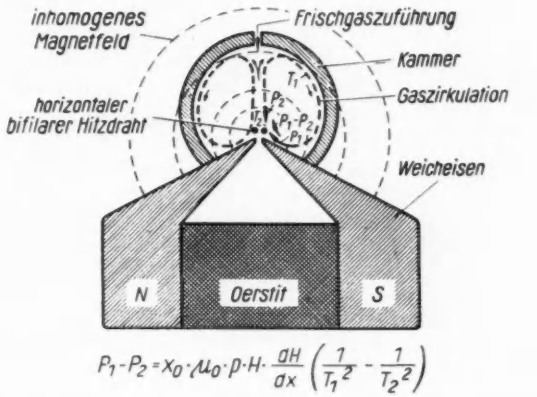
Dr. E. Hilden: *Gaswärme*, Vol. 5, No. 4, April, 1956, p. 145.

(Illustrated above)

New O_2 Recorders

Oxygen is strongly paramagnetic. Only NO has this property to a considerably lesser degree, whilst all other industrial gases are diamagnetic. This susceptibility of O_2 is very sensitive to temperature changes and obeys Curie's law. The combination of these two properties has made it possible to design O_2-recorders based on this principle, the main components of which are shown in the illustration. The oxygen is introduced into a chamber located in the unhomogeneous magnetic field of a strong permanent magnet. This magnet is composed of Oerstit material with two pointed pole pieces from soft iron. A hot wire heats up the oxygen particles, thus decreasing their susceptibility. The magnetic force exerted on them drops from the value P_1 to P_2. This difference causes the O_2 to circulate the faster and to cool the hot wire the more the higher the percentage of O_2 in the gas. If four hot wires are connected in a Wheatstone bridge circuit, two of which are exposed to this cooling effect, their change of resistance can be recorded and calibrated directly on the scale as % oxygen. The recorder 'Oxymat' made by Siemens uses chambers of 0.79 in. dia. and 3½ in. length with a platinum wire of 40 micron dia., coated with glass. The recorder 'Magnos 5,' made by Hartmann & Braun, uses magnets of truncated cone shape but works on the same principle. A more elaborate recorder which relies not on dynamic but solely on static magnetic forces and which is therefore much less robust, is made in the U.S.A. under the name 'Beckman recorder type G2.'

A. Naumann. *Gaswärme*. Vol. 5, No. 3, March, 1956, p. 75.



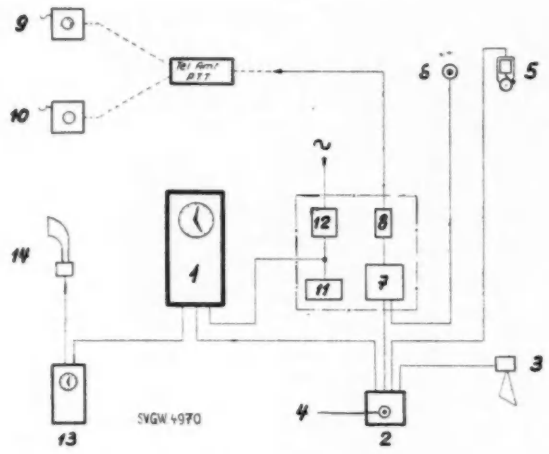
Inhomogenes Magnetfeld—inhomogeneous magnetic field.
Horizontaler bifilarer Hitzdraht—horizontal bifilar hot wire.
Frischgaszuführung—gas inlet.
Kammer—chamber.
Gaszirkulation—gas circulation.
Weicheisen—soft iron.

Alarm Circuit for Gasworks

If the carbonising plant of a gasworks is attended by only one man, arrangements have to be made to provide assistance in case of emergencies during the night shift or on holidays, usually by sounding an alarm in the Gasworks Manager's house if a contact is not operated in regular intervals by the attendant. This necessitates the constant presence of some person in that house. A new alarm circuit, shown in the illustration, was introduced in Berne with the aim of providing two additional alarm possibilities over the telephone lines. The master clock 1 transmits an electrical impulse to the relay 2 ten minutes before every full hour during the period of 10 p.m. and 6 a.m. daily and from 12 noon on Saturday to 6 a.m. on Monday. This sounds the advance signal 3 as a reminder to the attendant to press the resetting push button 4. If, however, nothing is done within the next 10 minutes, the alarm bell 5 in the Gasworks Manager's house rings. If the Manager is in, he pushes button 6 and goes to investigate the trouble. If not, the telephone relay 7 is energised, and this is connected via terminal board 8 to the public telephone exchange and transmits an alarm to telephone subscriber 9, usually another gasworks employee, and to the police station 10. A battery 11, charged from the mains by the rectifier 12, feeds the whole control circuit. The branch clock 13 operates the hooter 14 for the beginning and the end of the shift and for the tea break.

J. Zingg. *Monatsbulletin Schweiz. Verein Von Gas—Und Wasserfachmännern*. Vol. 36, No. 3, March, 1956, p. 53.

(Illustrated top of next page)

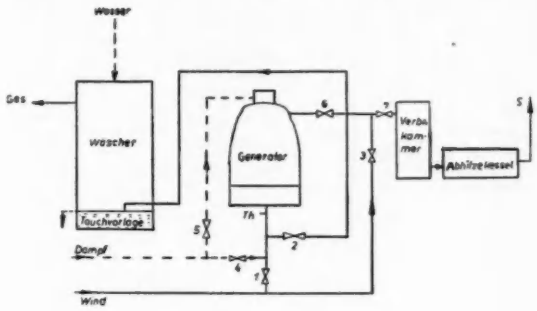


Tel. Amt PTT—public telephone exchange.

Producer Gas or Water Gas from the same Plant

Mechanical gas producer have as a rule adequate capacity so that if required low B.Th.U. gas can be supplied to the gas mains in addition to the fuel gas for firing the benches. However, additional carburetted water gas producers are needed to cover peak loads. If extensions to the carbonising plant take up the whole of the available producer gas for firing purposes, consideration may be given to the installation of gas producers which would produce depending on the requirements, either water gas or low B.Th.U. gas. The illustration shows such a plant. A thermometer Th is necessary, not less than 6 ft. from the steam inlet, so that the temperature at the producer can be regulated to about 58°C. by adjusting steam valve 4 when producing low B.Th.U. gas. The table below the illustration shows the position of the seven control valves for the four processes. The gas demand in Germany is expected to rise by 100% every 10 years, and one of the main future difficulties appears to be to reconcile conflicting supply and demand for coke. The installation of a plant in which either low or high B.Th.U. gas can be produced is thought to be the best way of adapting the coke yield to the coke demand while meeting varying demands for town gas.

J. Gapp. *Gaswärme.* Vol. 5, No. 1, January, 1956, p. 13.



Absperrorgane	1	2	3	4	5	6	7
Blasen	a	z	a	z	z	a	a
Aufwärtsgasen	z	z	z	a	z	a	z
Abwärtsgasen	z	a	z	z	a	z	z
Schwachgaserzeugung	a	z	z	teilw. a	z	a	z

Wasser—water.
Wäscher—washer.
Gas—gas.
Tauchvorlage—seal pot.
Dampf—steam.
Wind—blast.
Generator—gas producer.
Verbr. kammer—combustion chamber.
Abhitzekessel—waste-heat boiler.
Absperrorgan—control valves.
Blasen—blowing.
Aufwärtsgasen—up run.
Abwärtsgasen—down run.
Schwachgaserz—production of low B.Th.U. gas.
a—open.
z—shut.
teilw. a—partly open.

STATISTICAL DIGEST FOR 1955

THE latest edition of the Ministry of Fuel and Power's Statistical Digest has recently been published. The data in this edition refer to the year 1955 and comparisons are given as usual with former years.

The amount of coal consumed at gasworks has increased by 600,000 tons to 28 mill tons, a rise of about 2.2%, that to coke ovens by 400,000 tons to 27.1 mill. tons, a rise of about 1.5%, while the coal consumed at electric power stations has increased by 3.2 mill. tons to 42.9 mill. tons, a rise of 8.06%. The total sales of gas have gone up by 54 mill. therms to 2,581 mill. therms, a rise of approximately 2.0%, the greatest rise in sales being to industrial consumers, amounting to 38 mill. therms, followed by a 17 mill. therm increase to commercial consumers. Domestic consumption only increased by 2 mill. therms while public lighting fell by 3 mill. therms. The production of coke rose by 373,000 tons while breeze decreased by 39,000 tons. The number of consumers increased by 204,000, of these 201,000 were domestic and 3,000 industrial or commercial.

It is interesting to see how the availability of gas to meet peak loads has increased since the very cold winter of 1946-47. The total availability in that winter including 1,201 mill. cu.ft. of coke oven gas was 12,047 mill. cu.ft. This figure rose to 16,228 mill. cu.ft. including 1,869 mill. cu.ft. of coke oven gas for the winter 1955-56.

Unfortunately the figures given for the materials used in gas making and methods of gas making are only given up to the year 1954, but even so signs of a change are evident. Compared with 1953, the amount of coal carbonised in 1954 in horizontal retorts has fallen by 758,000 tons, that carbonised in continuous verticals and intermittent verticals has increased by 655,000 tons and 130,000 tons respectively, and coke ovens are carbonising an extra 151,000 tons. The rise in the consumption of oil for gasification, other than for carburetting, in 1954 is very marked, the consumption having increased from 2,000 tons in 1953 to 117,000 tons in 1954, and the total including carburetting to 544,000 tons. However, the total oil consumed in 1955, which includes carburetting, has shown a marked fall to 517,000 tons.

In other gas making processes, the consumption of coke in 1955 has begun to fall after a rise of 13.6% in 1954 over 1953, and now stands at 1,389,000 tons, a fall of 8.7% over 1954. In 1955 coke made, ex retort house, showed a rise of 372,000 tons or 3.0% over 1954 and a rise of 3.3% over 1953, as there was only a difference of 30,000 tons between that produced in 1953 and 1954. Coke made for sale began to rise again in 1955 after a fall of 4.0% in 1954. Coke used on works, ex retort house, also fell again after a rise in 1954 and was only slightly above the 1953 figure, 6,800 tons, as it had decreased by 157,000 tons or 8.5% on the 1954 figure.

Figures for the number employed in the industry are given as in October, 1954. There has been a tendency for the number employed in all grades to increase since July, 1939, and this reached a maximum in October, 1952, since then it has decreased and now stands at 142,700, which is only slightly above the figure of September, 1950.

The output of gas in 1954 per ton of coal and oil used, expressed as the yield per total coal equivalent, stands at 87.3 therms per ton, taken as the average for all boards before benzole extraction.

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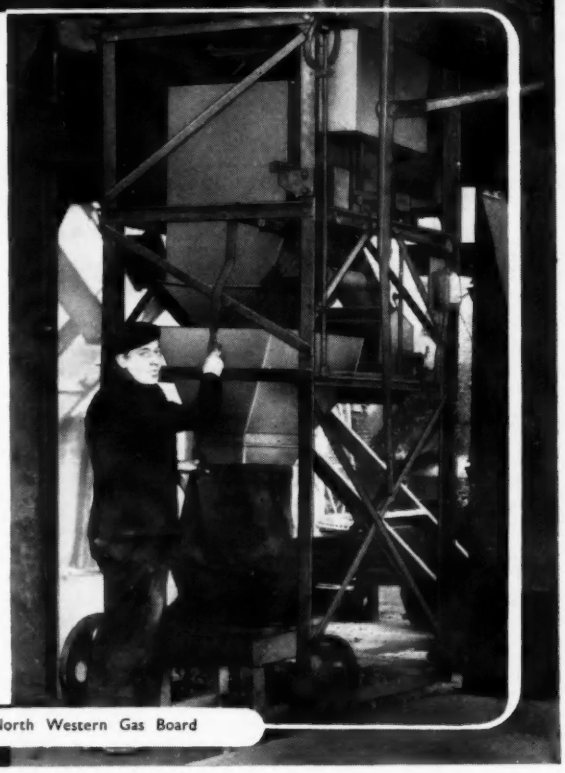
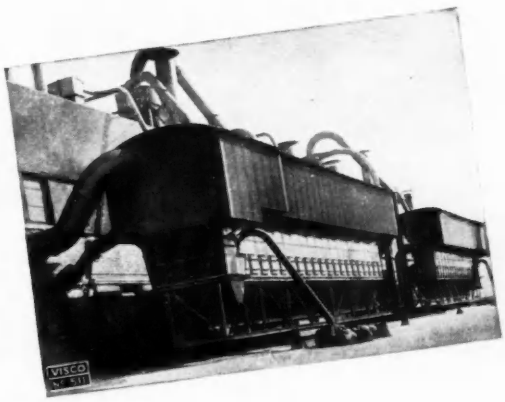


By Courtesy of the North Western Gas Board

Abolish Dust from Your Works

The value of "Visco-Beth" Automatic Dust Collecting Equipment for dealing effectually with the Dust Nuisance and its attendant Air Pollution has been proved at Collieries (where it is used to collect the dust at coal screens and tip Wagon stations) Gas Works, Pulverised Fuel plants, etc. In fact, in scores of works where dust is produced in quantities.

"Visco-Beth" Collectors have a recovery efficiency of 99 per cent. and will operate for long periods at full load with occasional unskilled attention. Write for "Modern Dust Collection and Fume Removal" list No. 532.



Two large and two small "Visco-Beth" Automatic Dust Collectors installed on the roof of a Sheffield factory recovering graphite carbon dusts.

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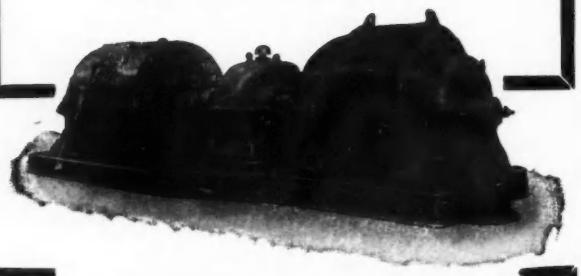

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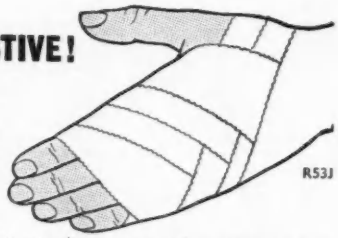

Dermatitis, production's greatest enemy, can soon put skilled hands out of action. Rozalex is the proved safeguard against this risk. For over 25 years Rozalex have specialised in barrier creams for industry. They have provided the answer to most industrial skin irritants. Their full technical resources and experience are at *your* disposal on request to: Rozalex Ltd., 10 Norfolk Street, Manchester 2.

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PUBLISHERS' NOTICE

The "Gas Journal" is published every Wednesday, price 1/6d.; by post 1/8d.

Subscription Rates: Home and Empire:—60/– per annum; Foreign:—70/– per annum. (Both payable in advance.) A copy of the "Gas Journal" Calendar & Directory is presented each year to continuous subscribers.

Classified Advertisements: All small classified advertisements are charged at 2/6 per line (approx. 7 words)—minimum charge 10/–. A Box Number address occupies 2 lines, and a further 6d. is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

Displayed Advertisements: Rates obtainable on application to the Business Manager. Change of copy for displayed spaces must be received 14 days prior to publication if proofs are required. Type area of inside pages 10 in. deep × 7 in. wide; block screen 120.

BUSINESS MANAGER: S. T. CULLEN

NORTHERN MANAGER: Philip W. B. King, Flat 1, 7 Langcliffe Avenue, Harrogate. *Telephone:* Harrogate 67625.

SOUTHERN & MIDLANDS REPRESENTATIVE: A. Engelhardt, T.D., 11, Bolt Court, Fleet Street, E.C.4. *Telephone:* Fleet Street 2236-7.

WALTER KING, LTD., 11, Bolt Court, Fleet Street, London, E.C.4.
Telephone: FLEet Street 2236-7. *Telegrams:* Gasking, Fleet, London.

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APPOINTMENTS VACANT

NORTH THAMES GAS BOARD

CHEMISTS and PHYSICISTS holding University degrees are required in the Laboratories at Watson House, Fulham, S.W.6, to undertake research work on the utilisation and design of domestic and industrial gas and coke appliances, particularly on cookers, water heaters, gas and coke fires, refrigerators, and industrial apparatus.

The Laboratories have recently been modernised and extended and are responsible for research work for the Gas Industry throughout the country.

The appointments will be permanent and pensionable, and the starting salary will be within the range of £680-£900 per annum, according to age, qualifications and experience.

Applications should be sent to the Staff Controller, North Thames Gas Board, 30, Kensington Church Street, W.8, quoting reference No. 666/280, to reach him within ten days of the appearance of this advertisement.

NORTH THAMES GAS BOARD

ASSISTANT ENGINEER (Mechanical) required at the Gasworks, Beckton, E.6, for supervising maintenance of heavy mechanical, steam and power plant. Higher National Certificate is the minimum qualification required.

Starting salary will be from £680 to £875 per annum according to age and experience. The successful candidate will be required to join the Staff Pension Scheme.

Applications, stating age and experience, to Staff Controller, 30, Kensington Church Street, W.8, quoting reference 666/345.

EASTERN GAS BOARD

IPSWICH DIVISION
MAINTENANCE FOREMAN, CHELMSFORD DISTRICT

APPLICATIONS are invited for the post of MAINTENANCE FOREMAN, who will be responsible for the supervision and control of all tradesmen (platers, fitters, blacksmiths, electricians, etc.) employed on a Works manufacturing 3 million cu.ft. gas per day.

Candidates should, preferably, have had experience in handling labour, and must have a sound practical knowledge of steam, petrol and diesel driven engines. Experience with mechanical transport will be considered an advantage.

The salary will be within the Grade A.P.T. 6 (Provincial 'A') £610-£690. A detached house near to the Works will be provided at a reasonable rent.

The successful candidate will be required to undergo a medical examination, and unless already subject to a Pension Scheme by virtue of the Gas (Pensions Rights) Regulations, 1950, will be required to join the Board's Staff Pension Scheme.

Applications, stating age, qualifications and experience, together with the names of two referees, to be addressed to the Group Manager, Eastern Gas Board, Chelmsford, to reach him by Saturday, August 4, 1956.

R. WHITING,
Divisional General Manager.

July 12, 1956.

(*Classified advertisements continued on page* 306)

APPOINTMENTS VACANT (ctd.)

DEVELOPMENT ENGINEER required by old established firm in Midlands engaged in the manufacture of Gas Plant with special reference to High Pressure Gas Valves. Experience in design and construction of Gas Washing and Cleaning Plant would be an advantage.

Apply, giving age, experience and salary required to No. 289, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

EAST MIDLANDS GAS BOARD

LEICESTER AND NORTHANTS DIVISION
SHOWROOM SUPERINTENDENT—NORTHAMPTON GROUP

APPLICATIONS are invited from suitably qualified persons for the position of Showroom Superintendent, Northampton. The appointment will be made in Grade APT. 8 (salary range £710/790) and the commencing salary will be in accordance with the experience and qualifications of the person appointed.

Applicants must have had considerable experience of Showroom supervision, appliance sales and consumer service and, especially, be well versed in window and general display practice.

The position is pensionable, and the successful applicant will be required to pass a medical examination.

Applications stating age and giving details of education, qualifications and experience, together with the names of two referees, should be addressed to reach Mr. E. B. Craddock, Group Manager, 45, Abington Street, Northampton, not later than Wednesday, August 15, 1956.

H. B. TAYLOR,
Divisional General Manager.

Leicester,
July 16, 1956.

EAST MIDLANDS GAS BOARD

LEICESTER AND NORTHANTS DIVISION
NORTHAMPTON GROUP
VACANCY FOR WORKING GASFITTING FOREMAN—WOLVERTON/STONY STRATFORD DISTRICT

APPLICATIONS are invited from fully qualified gasfitters for the position of WORKING GASFITTING FOREMAN for the Wolverton/Stony Stratford district (Northampton Group). The appointment will be made initially within Intermediate Grade IV/V (salary range £500-£570) with Class I Conditions of Service.

The person appointed will assist with the improvement and consolidation of service to a reorganised district of some 7,600 consumers, and there will be scope in due course for his establishment as a supervisory foreman within the Staff grades.

The Gasfitting Foreman will reside at Stony Stratford, where a newly constructed flat will shortly be available under a standard Service Occupation Agreement. He will be required to undertake certain standby duties, on a rota basis, in connection with the grid reception/holder station, for which an appropriate payment will be made.

Applications stating age, qualifications, and experience, and giving the names of two referees should be addressed to reach Mr. E. B. Craddock, Group Manager, 45, Abington Street, Northampton, not later than Wednesday, August 22, 1956.

H. B. TAYLOR,
Divisional General Manager.

Leicester.
July 23, 1956.

EAST MIDLANDS GAS BOARD

SHEFFIELD AND ROTHERHAM DIVISION
DEPUTY INDUSTRIAL GAS ENGINEER

APPLICATIONS are invited for the position of DEPUTY INDUSTRIAL GAS ENGINEER, Sheffield and Rotherham Division, at a commencing salary of not less than £1,050 per annum.

Candidates should be fully qualified, with a wide knowledge of industrial processes, ability to develop applications to meet consumers' technical requirements, practical experience in the design, installation, operation and maintenance of all types of industrial furnaces, and be conversant with the special furnace atmospheres used in both ferrous and non-ferrous processes. They should be corporate members of the Institute of Fuel, or possess an equivalent qualification.

A house can be made available at a reasonable rental.

The post is pensionable, and the successful candidate will be required to pass a medical examination.

Applications stating age, education, experience and qualifications, together with the names of two referees, should reach the undersigned by August 11, 1956.

A. GWYNNE DAVIES,
Secretary.

Beverley House,
University Road,
Leicester.
July 24, 1956.

ROYAL TECHNICAL COLLEGE, SALFORD

SALFORD
ACTING PRINCIPAL, J. F. YATES, B.Sc., M.Sc., M.I.E.E.

APPLICATIONS are invited for the post of SENIOR LECTURER IN GAS ENGINEERING from suitably qualified candidates who should be Corporate Members of the Institution of Gas Engineers and/or should possess a University Degree or other equivalent qualification. Teaching experience is desirable and industrial experience is essential.

Applicants should be capable of teaching Gas Engineering, Distribution and/or Utilisation.

Salary in accordance with the Burnham Technical Report, 1954, namely, £1,065-£1,215. The scales which it is proposed should be brought into operation October 1, 1956, are £1,350-£1,550.

For further particulars and forms of application please send a stamped addressed envelope to the Principal, Royal Technical College, Salford 5. Applications should be returned as soon as possible.

R. RIBBLESDALE THORNTON,
Clerk to the Governors.

WEST MIDLANDS GAS BOARD

COKE MANAGER'S DEPARTMENT
TECHNICAL OFFICER

A TECHNICAL officer is required in the above department, which is located in Birmingham, to assist in advising local authorities and consumers on the utilisation of coke, particularly in connection with the establishment of smoke-control areas.

Applicants should have a technical qualification in fuel subjects and experience in a similar capacity.

The salary will be within the Senior Gas Officers Scale "A" (£1,025 x £40—£1,145 per annum).

The post is pensionable, and the successful candidate may be required to pass a medical examination.

Applications, stating age, qualifications and experience, together with the names of two referees to the Industrial Relations Officer, West Midlands Gas Board, 6, Augustus Road, Edgbaston, Birmingham, 15, to reach him not later than August 27, 1956.

J. C. INGRAM,
Secretary to the Board.

SCOTTISH GAS BOARD

DUNDEE GROUP—DUNDEE DISTRICT
TECHNICAL ASSISTANT (DISTRIBUTION)

APPLICATIONS are invited from suitably qualified persons for the above position. The commencing salary will be within Grades A.P.T. 7/8 (£670 to £790 per annum) with placing according to qualifications.

The successful applicant will be required to prepare drawings, specifications and estimates for mains and service projects and to carry out technical supervision of distribution work on a large district.

JUNIOR TECHNICAL ASSISTANT (LABORATORY)

Applications are invited from suitably qualified persons for the above position.

The salary scale applicable to this post is A.P.T. 2/6 (£385 to £690 per annum) with placing according to qualifications.

Both positions are pensionable, and the successful applicants will be required to pass a medical examination.

Applications stating age, and giving particulars of education, training, experience and qualifications should be addressed to W. S. Johnston, Group Manager, Scottish Gas Board, 50, East Dock Street, Dundee, to arrive not later than 14 days after the appearance of this notice.

NORTHERN GAS BOARD

CUMBERLAND DIVISION
DOMESTIC AND INDUSTRIAL GAS SALES MANAGER

APPLICATIONS are invited from persons having the requisite experience to organise and develop gas sales for all purposes in the County of Cumberland. To meet the rapid expansion of industry in this area, sound practical and theoretical knowledge of the use of gas for industrial and commercial purposes is essential.

Salary ranging between £1,105-£1,265 per annum. The successful candidate will be required to pass a medical examination, and be subject to the provisions of the Board's Staff Pension Scheme.

The person appointed will be required to live in Carlisle and to take up his duties before October 1.

Applications stating age, qualifications and experience, together with the names of two referees, should be addressed to the undersigned not later than August 7, 1956.

A. R. CROFT,
Divisional General Manager.

50, Castle Street.
Carlisle.
July 19, 1956.

NORTH WESTERN GAS BOARD

WIRRAL GROUP
SENIOR CHEMIST

APPLICATIONS are invited for the above pensionable position at a salary within Grades A.P.T. 9/10 (£755/£920 per annum).

Further details and an application form may be obtained from the General Manager, N.W.G.B., Wirral Group, Hind Street, Birkenhead, to whom the completed applications should be returned not later than August 16.

WALES GAS BOARD

SWANSEA UNDERTAKING

APPLICATIONS are invited for the appointm of DEPUTY ENGINEER AND MANAGER the Swansea Undertaking.

The applicant must have a sound knowledge modern distribution practice and of the management and administration of a gas undertaking.

The Swansea Undertaking is supplied with co oven gas from the Board's Grid system, and to m peak load demands carburetted water gas is manufactured. Ability to control these peak load pla is necessary, and appropriate technical qualificatio are essential.

The commencing salary, according to experien and qualifications, will be within Grade B of t Senior Officers National Salaries Table (£1,105/£1, per annum). The post is pensionable.

The successful applicant will be required to pa a medical examination.

Applications, giving details of age, qualificatio experience and present position, together with t names of two referees, should reach the undersign not later than August 31, 1956.

C. B. MAWE
Secretary.

2, Windsor Place,
Cardiff.

WALES GAS BOARD

MERTHYR TYDFIL AND DOWLAIS UNDERTAKING
SALES SUPERINTENDENT

APPLICATIONS are invited for the above appoiment. Candidates should have had extensive perience of gas sales to domestic and commerc consumers. Salary will be in accordance with Gra A.P.T. 6 (Prov. 'A') £610-£690, or Grade A.P.T (Prov. 'A') £670-£750, depending on experience a qualifications. The post is pensionable. T successful applicant may be required to undergo medical examination.

Applications, stating age, training, qualificati and experience in full, together with the names two referees, to the undersigned within 14 d of the appearance of this advertisement.

D. EMRYS WEST,
Engineer and Manag

Gas Offices,
143, High Street,
Merthyr Tydfil.

SOUTH WESTERN GAS BOARD

BRISTOL/BATH DIVISION
SENIOR TECHNICAL ASSISTANT—AVON STREET WORKS

APPLICATIONS are invited for the above positio The successful applicant will be placed within Gra IX (£755-£855) or Grade X (£820-£920) according experience and ability. Associate Membership of Institution of Gas Engineers is a desirable qualifi tion and the holding of a Higher National Certific in Mechanical Engineering will be an advantage.

The Manufacturing Plant consists of Horizon Retorts and Water Gas Plant.

A good flat in a very desirable residential area available at a reasonable rent.

Applications, addressed to the undersigned, sho be received not later than August 31, 1956.

CHARLES R. INGHAM,
Production Engineer and Manag

Radiant House,
Bristol, 1.
July 27, 1956.

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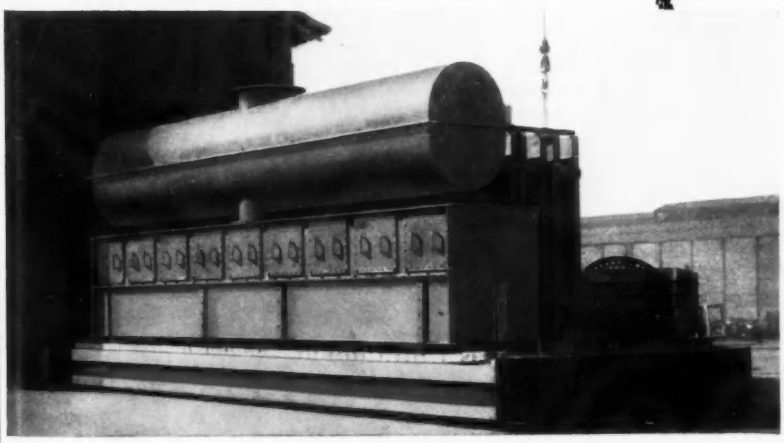

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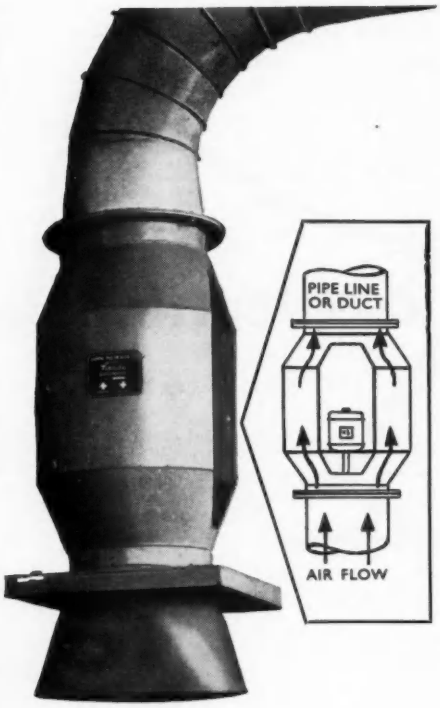

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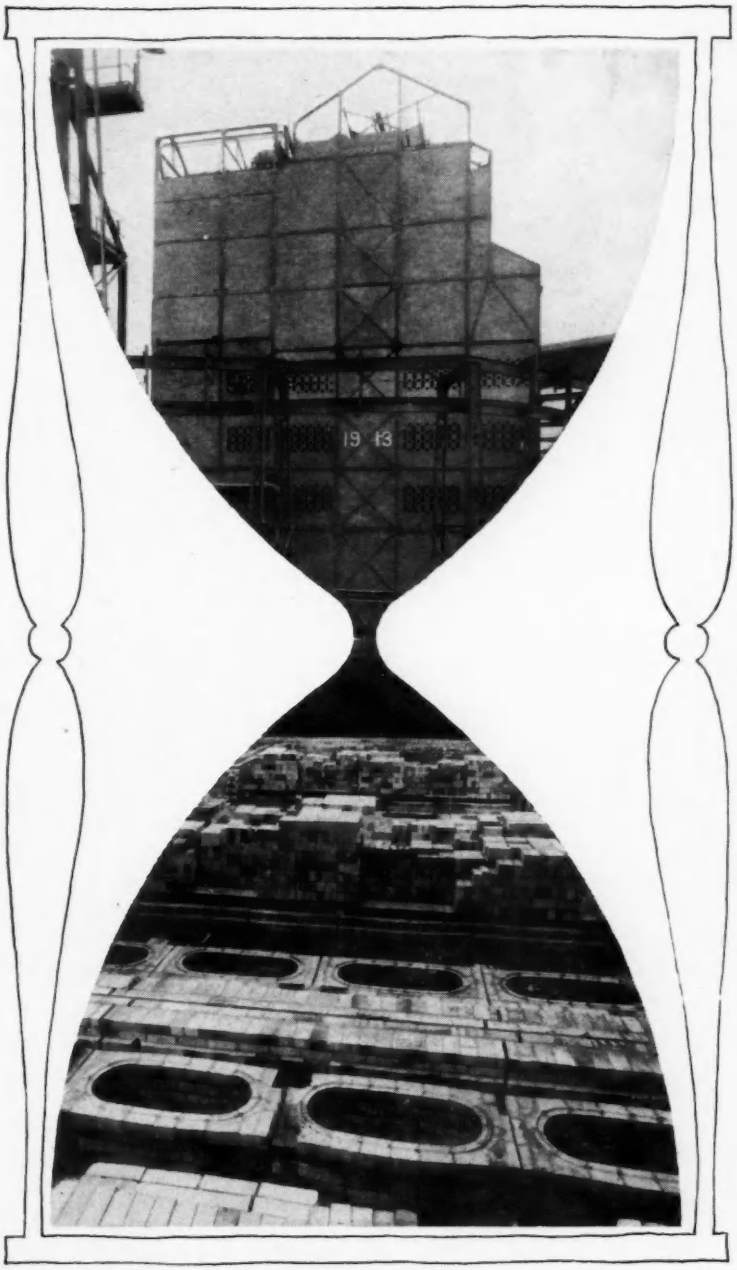
Photographs by courtesy of Northern Gas Board.



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Tower Purifiers for the Gas & Coking Industry

These Tower Purifiers having a capacity of 26,000,000 cubic feet of gas per day were recently installed at the N.C.B. Coke Oven Plant, Avenue, Chesterfield.

Courtesy of the National Coal Board, East Midlands Division.

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